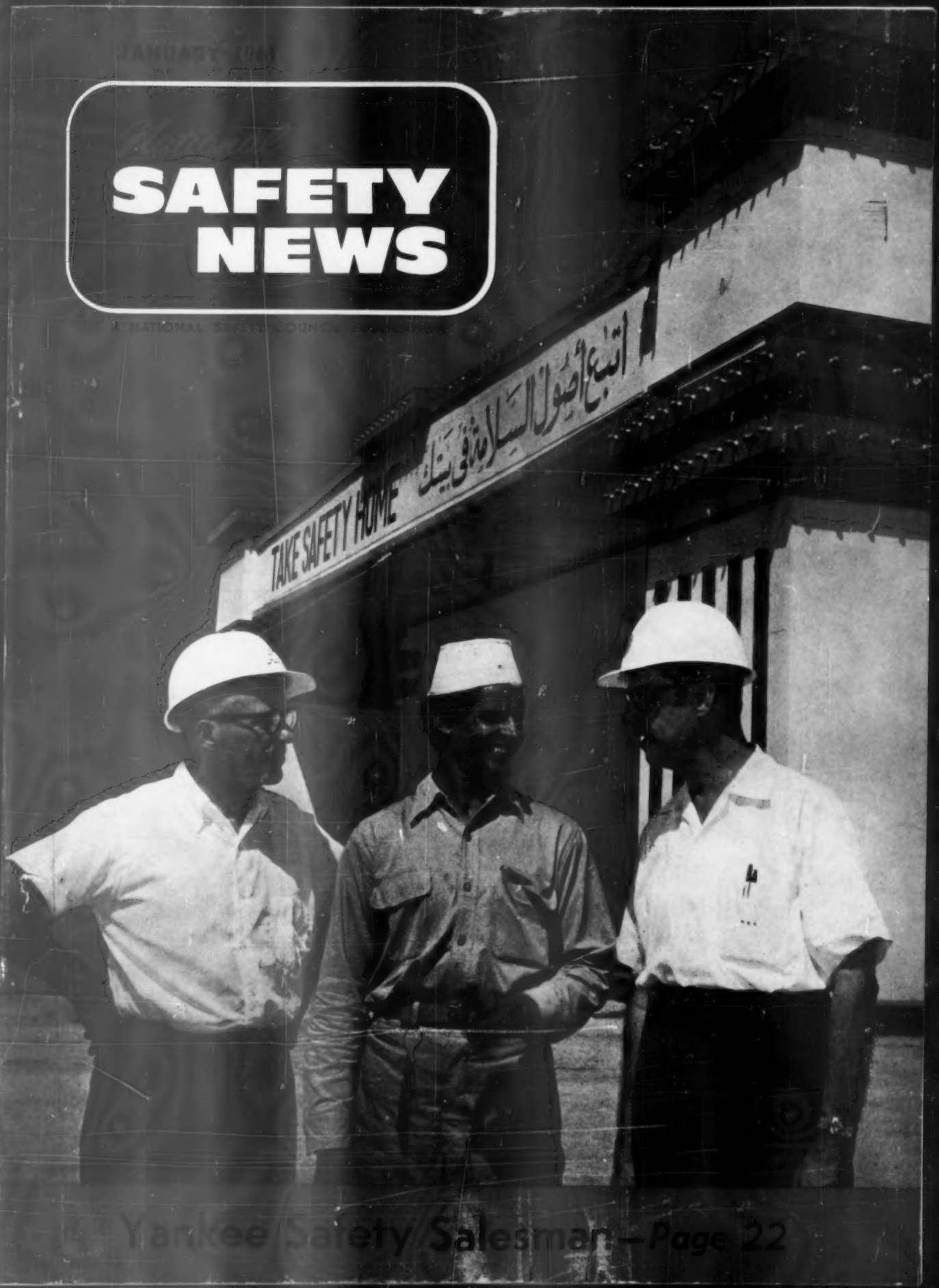
SAFETY NEWS



Yankee Safety Salesman — Page 22

IT'S LIKE BEN FRANKLIN SAID...

Even after all of the millions of dollars that have been spent in safety education, there is overwhelming proof that Ben is still right.

Consider where the responsibility lies for the 75,000 plus industrial toe injuries to the American worker every year. It doesn't take a philosopher to figure out that ordinary shoes are accountable for the growing number of foot injuries each year and are the weak link in the well forged chain of foot safety.

Don't you learn the hard way. Remember, it is *only* the steel toe that makes the shoe safe.

Write today for your illustrated copy of
A PROGRESS REPORT OF INDUSTRIAL FOOT PROTECTION

Safety Box Toe Company
812 STATLER BUILDING · BOSTON

Circle Item No. IFC—Reader Service Card

HY-TEST's Honeydew Softie glove leather safety shoe (and oxford) fits like a glove . . . protects like Hy-Test. Your workers will appreciate the easy-going comfort features plus the assurance of the famous Anchor Flange Steel Box Toe in these two new styles. Ask your Hy-Test Representative or write today for full details...HY-TEST SAFETY SHOES, Division, International Shoe Company, 1509 Washington Ave., St. Louis 66, Mo. . . . 2224 N. Tenth St., Philadelphia 33, Pa.

H937 (above) . . . Honeydew softie glove upper, extended quarter overlap, completely leather lined, leather laces, billowy cushion insole and natural Neoprene Cellular Crepe sole, Dacron stitched. Sizes: C...6-12; D, E, EEE...5-12.

H537 (left)...Similar to above except oxford. Sizes: B...7-12; C...6-12; D, E...5-12.

HY-TEST

HY-TEST INTERNATIONAL SHOE COMPANY SAFETY SHOES

Safety Shoes

National SAFETY NEWS

A NATIONAL SAFETY COUNCIL PUBLICATION

Vol. 83, No. 1 JANUARY 1961

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NATIONAL SAFETY COUNCIL

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THE COVER

Paul Jones, left, talks safety with Aramco employees, N. A. Scardino, right, district manager of Dhahran, and Shalhoob Fadgoosh, gate controlman. Main gate bears safety slogan, "Take Safety Home," in English and Arabic.

38,000 copies of this issue were printed.

WHAT DO YOU KNOW ABOUT THORKOTE?

Now . . . COLOR in industrial safety footwear: olive, red, white, yellow or black . . . made practical by a completely new, exclusive, and supremely tough protective finish called THORKOTE. This finish protects the rubber from oxidation and cracking—greatly increases resistance to abrasion and prolongs boot wear and service—amalgamates with the rubber itself to form a lifelong armor against the corrosive action of fats, oils, grease, alkalis, caustics and cleaning chemicals. Write today for new, complete catalog showing 22 colorful styles.

NEW FLEECE-LINED PAC
Stock No. 1128—
Beet-red rubber with black sole, THORKOTE, fleece-lined leg, wool felt innersole.

Lehigh
SAFETY SHOE CO.
Emmaus, Pa.

EDITORIAL

Tell the People!

"YOU say you re a member of the National Safety Council? But you do *industrial* safety work . . . I thought the National Safety Council was that outfit that tells me how to avoid becoming a highway statistic. What does a member of the National Safety Council have to do with *industry?*"

How many times have you heard this one? And how often have you wished someone would tell the general public about all the basic work that industrial safety men do?

We keep trying, but it's not easy. A foundry man can tell you how to bott up a hole so a cupola can be tapped out without spattering everybody in the shop, but unless he is unusually gifted, he would have a rough time getting people to listen to him.

It's different when a traffic specialist talks shop. He describes situations that everyone sees every day.

One group of industrial safety specialists recently made a good try at getting its message across. When the Power Press and Forging Section Executive Committee met at Louisville in December, a local member of the committee set up both newspaper and radio publicity for the meeting. He would also have had a television spot, but the program was booked solid with Christmas subjects. A newspaper reporter and a photographer covered the executive committee's tours of local plants. The radio interview was unrehearsed; the only difficulty being that 15 minutes was barely enough to get started on safety.

If more sections would make this kind of effort, we might be able to get across to the public the idea that the National Safety Council is busy all the time identifying accident prevention needs, finding out what to do about them, and seeing that it's done.

It takes imagination and leg work. When a section sets up a meeting, the publicity chairman should start working closely with the safety director of the host plant. The local man knows which newspapers have the best circulation, which radio and TV personalities the largest audiences. He should be able to supply an angle to help persuade the city editor and the program manager that Something Big Is Happening in Hometown this week.

The man who talked it up on radio for the Power Press and Forging Section pointed out to the audience—which at nine in the morning is mostly housewives—that a wife had a vital interest in what this group of metalworking safety experts was doing in Louisville that day. These specialists were making it possible for more men to keep bringing home paychecks regularly. For the manager on the way to his desk with one ear on traffic sounds and the other on the car radio, he pointed out that the industrial safety man stands guard over the profit in every job—stands guard against accident costs that mean red ink.

You may never have the opportunity to help publicize an NSC meeting such as the Power Press and Forging Section get-together in Louisville. But you can help get the industrial safety story—your story—to the general public. Here are some things to keep in mind: (1) be familiar with your local media—newspapers and radio and television stations (2) keep your story tied to the home town folks—treat workers as husbands, wives, neighbors and (3) be imaginative —remember news is made by the different twist, the unusual angle.

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Telephone service has never been so fast, convenient and dependable as it is today

...and it's going to be better!

Two words—*growth and change*—describe major trends in the Bell telephone business. There is more of every kind of service for more people. And more and more new things are coming along all the time.

Direct Distance Dialing is bringing a new era of speed and convenience in Long Distance calling.

Nearly 24,000,000 customers can now dial Long Distance calls direct to 39,000,000 telephone numbers in the United States and Canada.

New underseas cables make it easy to talk across oceans as clearly as a call across town.

An entirely new era in communications for business is being opened up by the Bell System's Data-Phone service. It enables electronic business machines to "talk" to each other over regular telephone lines. Some day there may be more of those calls than calls between people.

Those are some of the new services. Just a few of the other newer things are shown on the right.

There's much more to come . . . from research and development, from the investment of millions of dollars of new capital, and from the Bell System's never-ending desire to give you the best and the most telephone service in the world.

CALL DIRECTOR TELEPHONE

With the touch of a button you can connect other office telephones, set up interoffice conference calls, add other office extensions to incoming calls. Two models. 18 and 30 push buttons. Many thousands already in service.

THE PRINCESS

It's little! It's lovely! It lights! A new compact extension telephone for any room in the house. A tremendous success all over the country. Available in white, beige, pink, blue and turquoise.

BELLBOY SERVICE

One of the newest Bell System services. A person away from the telephone hears a tone signal (sent from the telephone exchange) on a pocket radio receiver. Alerts him to call his home or office to get a message. Now available in 14 major cities.

HOME INTERPHONE

Lets you call any other room in the house that has a phone. Or switch outside calls to another phone. Also lets you answer the door from any phone. Microphone in telephone and speaker on wall beside each telephone enable person in other room to talk back without lifting receiver. Will be available nationally this year.

BELL TELEPHONE SYSTEM

THE SAFETY VALVE

Nothing human is alien to me
—TERENCE

PLAYING BY EAR

SAFETY MEN and editors have a lot in common. Both deal with intangibles—and the most elusive element is the human one. We try to influence people through a variety of appeals.

There is a persistent demand for pat formulas—patterns we can use in planning our programs. We study organization charts and surveys of opinion, hoping methods which work in other places will do the same for us.

Success stories always find eager readers. NATIONAL SAFETY NEWS has published quite a few of them. You hear them at every National Safety Congress and regional conference. There's a story behind every award for safety performance. Much can be learned from them.

But too often we jump to the conclusion there's some magic in the plan itself. The result is disappointment. There are too many times when the plan won't work for somebody else.

One thing that has impressed me in 37 years with NSC is the variety of methods that get results. Some methods have been rather unorthodox, but they worked for the author and his organization. And these safety men have had a variety of temperaments and differing backgrounds of training and experience. They get plenty of ideas from others, but the plans they devise are distinctly their own.

It isn't possible to catalog and classify people too exactly. We do know in a general way the desires and fears they are born with and those they acquire. And knowing the appeals to use is something that comes with experience, plus a sensitiveness to human thoughts and emotions.

Practicing the scales will help. But in dealing with human beings, you may have to play it by ear.

AFTER THE BRAWL

BY THE EVE of election day, the candidates, TV and radio newscasters, and a large section of the public were leaning on the ropes.

Chet Brinkley (or maybe it was Dave Huntley) was wearily looking forward to escape from the barrages of half-truths and the exchange of unpleasantries that make up campaign oratory. Most of his listeners heartily echoed those sentiments. Eyes, ears, and minds can take only so much.

It's lucky for the country that we have men with the abdominal fortitude needed to run for office, but we probably lose the services of many able men with no taste for bare-knuckle slugging. A few years ago a president got elected by "give'em hell" tactics; now campaign managers feel that's the way to win.

Now the shouting is over, many fears of the timid are subsiding. Conservatives can find comfort in the fact that nothing mellows radicalism like election.

Looking at the situation from our point of view, we can find satisfaction in knowing that safety is nonpartisan. It has become a fixed policy of federal administrations, regardless of party. In addition to the President's Conferences on Occupational Safety and Street and Highway Safety, many federal departments are rendering invaluable service to accident prevention in many fields.

But valuable as these governmental services are, the power for effective action must be generated where accidents occur—in plants and communities.

A MONTH'S MAIL

RETURNING HOME after a month's absence, one thing that greeted us was a mountain of mail on the dining table, carefully assembled by an obliging neighbor.

Personal mail that looked important had been forwarded. What had been held included:

Political literature—too late . . . bills . . . advertising matter addressed to "occupant" . . . appeals for various causes—all worthy, no doubt, but too many for a limited bankroll . . . bills . . . a wedding invitation . . . magazines . . . the bank statement . . . bills . . . and two checks!

News of my retirement apparently got around. In addition to good wishes from friends, there was an invitation to join a local senior citizens' group and a circular from a manufacturer of geriatric vitamins.

CHECK THOSE REFERENCES

IF YOU DON'T check references adequately on a candidate for an executive job, you stand a 50 per cent chance of hiring a misfit, says Rawle Deland in a recent issue of *Management Review*.

A reference check, he points out, can spot those who falsify their records or conceal hidden faults. It also has a positive side: knowing what a man has actually done is a great help in appraising his capabilities for another job.

It is seldom safe to accept references at face value. Some reference-givers are vindictive; they haven't a good word for anybody who leaves the company.

Others will strain the truth in the other direction. Short of recommending a light-fingered chap for a cashier's job, they'll do anything to help a fellow get located. And there are others whose references are full of meaningless words.

Along this line, the personal interview is also important. While it isn't always possible to spot a phony, a shrewd interviewer can often make an applicant reveal his weaknesses and strong points.

Carman Fish

next?

If you've ever thought that this couldn't happen to your plant, a few facts may quickly change your mind. It can and *does* happen to 305 industrial plants every day! Staggering? — so are the losses, $52,260,000 worth every year.

But your plant needn't be chalked up as just another statistic! You can do something about it!

First, let's consider the cause of such large loss fires. It's a known fact that one of the main reasons small fires become blazing infernos is — *the delay in reporting the discovery of a fire or immediate notification to the local fire department.* The chart below is a grim, factual reminder of

What happens when an alarm is delayed*

Property	Minutes Delayed	Reason for Delay	Loss†
Creamery		Could not find alarm box	$75,000
Woodworking plant		Discovered by passerby	$101,000
Wire & cable plant		Employee tried to extinguish	$395,000
Ore refinery		Employee tried to extinguish	$250,000
Lumber yard		Employee tried to extinguish	$150,000
Rubber plant		Fire destroyed telephone	$100,000
Rubber warehouse		Telephone alarm, wrong address given	$55,000
Metalworking plant		No alarm system	$245,000

†Includes loss of buildings, material and equipment, but not loss of business records and other intangibles.

What you can do

Provide your plant with *complete* protection with a Gamewell FLEXALARM system that *identifies* the *zone location* of the fire, and one that can be *directly connected* with the *Municipal Fire Department.*

A FLEXALARM system can be pre-engineered to meet the precise needs of your plant. FLEXALARM is available as a coded or non-coded system, semi or completely automatic, with practically limitless possible combinations of annunciators, special drill, test and alarm features. For example, it can be tied into the municipal alarm system at the curb; integrated with the sprinkler system; or automatic fire detection devices. It's simple to specify, easy to install, efficient and economical.

Specify Gamewell . . . for maximum protection at minimum cost. Write THE GAMEWELL COMPANY, 1297 Chestnut Street, Newton Upper Falls 64, Massachusetts. *A Subsidiary of E. W. Bliss Co.*

*Facts on chart, itemized by The Gamewell Company, were taken from an article entitled "The Easiest Help Your Competitor Ever Got," in the May-June, 1959, issue of MODERN PLANT AND OPERATION MAINTENANCE. Reprints of this article may be obtained by filling out the coupon.

BLISS Gamewell®

FIRST...WHEN SECONDS COUNT

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A Subsidiary of E. W. Bliss Co.

- ☐ Have a Gamewell Fire Protection Engineer call.
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Name .....
Title .....
Firm .....
City ..... *Zone* .... *State* .....

VOICE OF THE READER

Comments on topics of current interest are invited. They need not agree with the views of the editors

Accident Barometer

LOUISVILLE, KY. The change to chart form on the "Accident Barometer" page has clarified the presentation of statistics for our supervisors.

I now mark this department for special note when sending our copies of the NEWS throughout our area plants.

Thanks for this new motivation builder.

—IRVING C. ERRICKSON,
Area Safety Director,
Reynolds Metals Co.

Wire Rope Clips

JANESVILLE, WIS. While perusing issues of NATIONAL SAFETY NEWS, I read the article "How to Use Wire Rope Clips," by H. V. Hodnick, which appeared in the October 1959 issue on page 128.

In my opinion the article is well written and most informative, particularly the pictures. If possible, I would like to purchase 50 copies of this article and would appreciate any assistance you may provide.

—D. W. KELLY
Safety Engineer
Chevrolet Division of
General Motors

Off The Job

SCHENECTADY, N. Y. In your July 1960 issue of NATIONAL SAFETY NEWS we were impressed with your article on "Electrical Safety in the Home," in your "Off the Job" column.

We would like to give our entire work force of 2,000 the benefit of the information included in the article, but our five copies of NATIONAL SAFETY NEWS would not give us the required circulation. We would, therefore, like to request permission to reprint the article for individual distribution to our employees.

Thank you in advance for consideration of our request.

—BENJAMIN E. LOCKWOOD,
Safety Director,
Schenectady Gen. Depot,
U. S. Army

Likes December Issue

CHICAGO. I have noticed a terrific improvement in the format of NATIONAL SAFETY NEWS. The more attractive appearance invites me to look through it a little more than usual.

The study on shoes and glasses was impressive, since it covered so many plants, and in several different industries. Then again, the way it was presented helps me in my work. I can show this to top management with some pride, since it is laid out attractively. I don't have to convince a client on the basis of just my views when I have this study before me. All I need to say is, "Here it is in a national safety magazine."

The new "Accident Barometer" really has a punch. It's not at all static. Normally I don't pay much attention to graphs and figures, but the color and design on this page drew me into it.

"Latest Merger—Off-Job, On-Job" was another attractive feature in the December issue. Your pictorial article "It's Cheaper Than You Think!" was useful, and well presented, too. In fact, the issue was good all the way through. Congratulations.

—GEORGE MACDONALD,
Vice President,
Self-Insurers Service, Inc.

More "Cheaper"

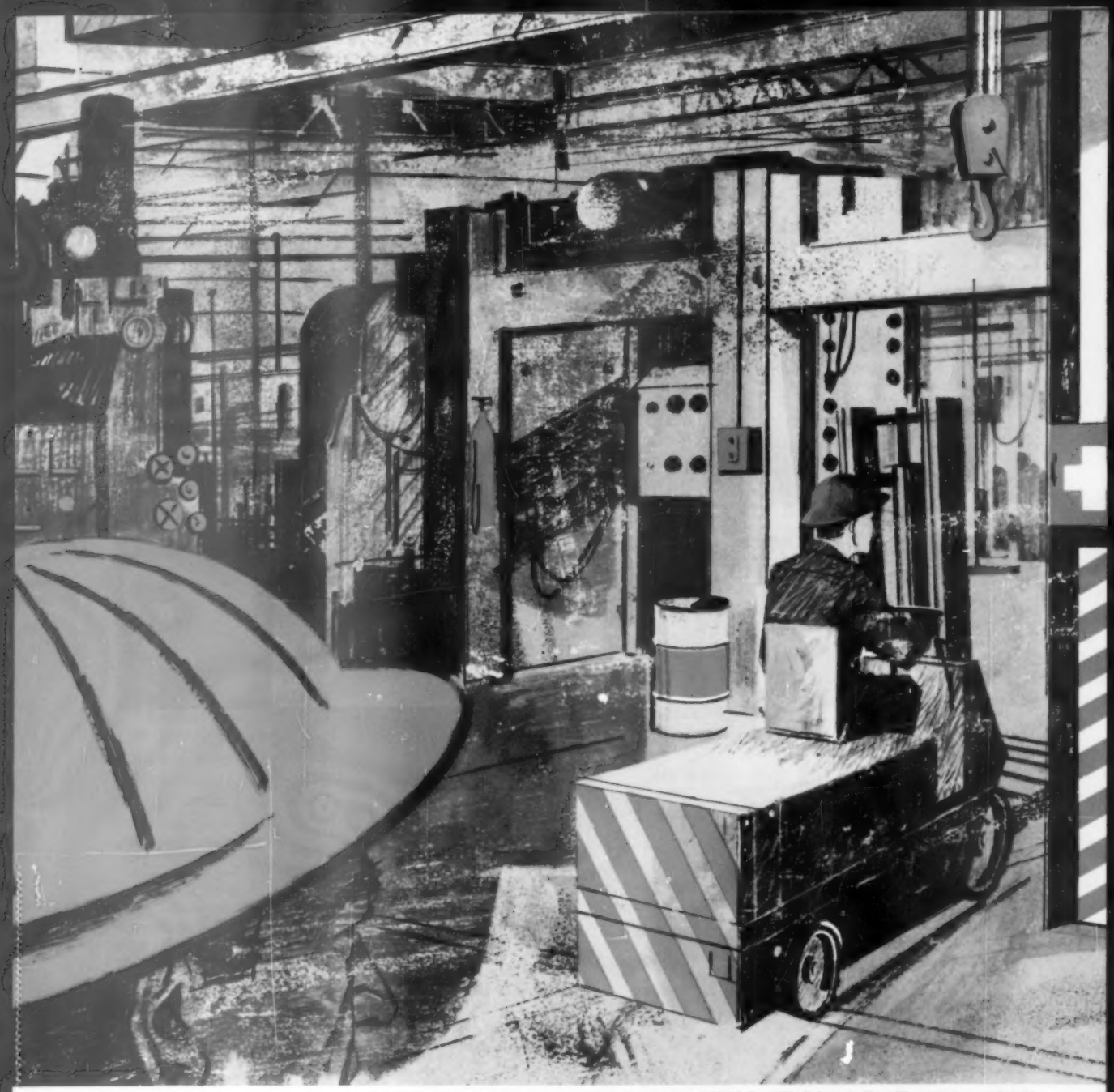
NEW YORK CITY. In the December issue you presented several of the ideas that were shown at the Power Press and Forging Section's Thursday afternoon session of the National Safety Congress. If you use more of these safety devices in future issues, please point out that this demonstration is new each year. We use the same title—"It's Cheaper Than You Think," but the ideas are new each year.

—DONALD W. STITT,
Assistant General Manager,
Industrial Relations,
Continental Can Co.

Mr. Stitt, who is general chairman of the Power Press and Forging Section—a lively and aggressive group—has somehow guessed what we were thinking. We like "It's Cheaper Than You Think" so well we do *intend to give our readers more. Look for it next month.*

"Here's a suggestion that we serve buttered popcorn at the film showings."

Circle Item No. 5—Reader Service Card→



This insert printed with Day-Glo litho ink. Day-Glo paint is even brighter.

Day-Glo® shouts safety first!

Day-Glo has little in common with standard safety paints. It is *fluorescent*, with a brightness up to four times greater than ordinary safety paint. Day-Glo can help reduce industrial accidents dramatically! Applied to plant hazards and safety equipment, it shouts its warning on first sight, and up to four times further and faster.

Use Switzer Day-Glo on cranes, danger signs, fork lift trucks, first aid boxes, safety helmets, machinery, fire protection equipment and obstructions of all kinds.

There are five brilliant colors, for indoor or outdoor use, brush or spray application.

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Please send me complete product and sales information on Day-Glo Industrial Safety Paint.

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Sales offices: New York, Chicago, Los Angeles and Berkeley, California

Day-Glo is a registered trademark of Switzer Brothers, Inc., originators of daylight fluorescent colors.

Big Bertha Bulbs Light Forge Shop

A ceiling-mounted birthday cake is making a bright, safe work place at IH Tractor Works

George Gouzoules, plant electrician, compares mercury vapor white bulb (left) with 300-watt incandescent bulb. The new mercury vapor bulb has life expectancy of 12,000 hours, the 300-watt bulb about 1,000 hours of use.

COINCIDENT with its golden anniversary year, 1960, International Harvester's Tractor Works in Chicago installed in its forge shop a truss-mounted birthday cake of 65 large lightbulb "candles," one for each year of the work's existence, plus 15 to grow on.

This candlepower—mercury vapor white bulbs—is the firm's $20,000 approach to boosting productivity and saving lives and limbs among the forge shop's employees.

In this huge 500 by 100-ft building with a 74-ft. peaked ceiling, hammers range from about 2,000 to 12,000-lb. rating. Forging presses are in the 1,600 to 2,000-ton class. Under the former lighting system, these machines were surrounded by shadows, making maintenance a difficult task. Obviously, the hot, heavy, mechanical operations required better light.

The forge shop—one of two original buildings on the plant site—was erected in 1910. Between that time and the flipping of the switch for the new system, constant attention was applied to the problem of improving lighting. First, incandescent bulbs by the dozen provided illumination. Reflectors later supplemented this arrangement. Floodlights were added next—always moving forward toward better lighting. The problem also involved the hindering existence of smoke and dust prevalent in forging operations.

The current solution to lighting difficulties has been developed by Works Manager Homer F. Griffith, the plant's engineering staff, and management-union safety committees. "Desire for better lighting has

been a constant objective in this 50-year-old plant," Griffith said. "In this latest project, experts analyzed our illumination problem and viewed prospective solutions. Finally, we selected the mercury vapor system, checked cost plans submitted, and obtained materials. Then, the 104-day installation began."

In operation since July 15, 1960, the 65 units of the new lighting system are mounted in spun aluminum fixtures strung the length and breadth of the mammoth forge shop, providing from 18 to 32 foot-candles on night shifts and up to 55 foot-candles, when assisted by daylight.

With the former incandescent bulbs, readings ran to a maximum of 8 foot-candles during after-dark work periods. And in daytime they were much less than the currrent upper foot-candle limit.

"Each lamp is color-corrected," George Gouzoules, chief electrician at the plant, said. "And a single bulb costs about $32 to replace. But long life is assured by setting them in shock-absorbing mounts to minimize effects of vibration from hammers and forging presses below."

Maintenance crews appreciate the system, since they have to make fewer changes. The 300-watt incandescent bulbs often had a maximum life of 1,000 hours, yet frequently lasted less than a week.

The new lamps have a life expectancy of 12,000 hours—almost a year and a half. Consequently, any risks involved in changing bulbs high above the shop floor are now reduced.

Another safety feature is the rigging of lamps in independent circuits of three. Without seriously impairing over-all lighting in the shop, only the circuit containing a burned-out bulb need be shut down for replacement, and maintenance men can work on these fixtures from cranes extending from one end of the building to the other.

Three switch panels, located at each end and in the middle of the forge shop, control the lights. Lamps are mounted 30-ft. above the floor to allow leeway for moving cranes. The former lighting system is still in place, to be used for emergency or in event of failure of the new circuitry.

BEFORE ▲

This is the way a section of the forge shop looked with incandescent lighting just before the new system was completed.

AFTER ▼

This is the way the same section of the forge shop looked after the mercury vapor white lights were put in and turned on.

M-S-A® DURA-GRIP STAYS DOWN, STAYS SAFE

On properly prepared surfaces low-cost, non-skid, Dura-Grip will wear for years. This anti-slip surfacing compound will *not* come up. The tenacious bonding agent is a special polyurethane compound proved superior in actual customer exposure tests. Hard, protruding aluminum oxide grits put abrasive teeth in the rugged-duty locking coat.

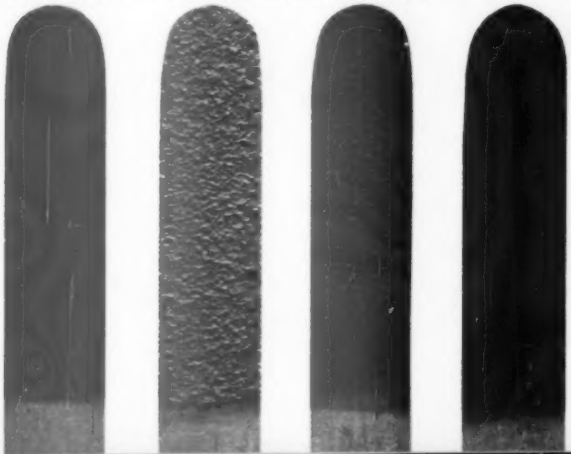
In case after customer case "no premature resurfacing" was reported. No more on-again, off-again adhesive problems. Over 1,000 important companies have purchased M-S-A® Dura-Grip since its introduction in late 1959.

Use it on concrete. On metal, wood or marble. Inside or outside. Any place traffic could conceivably slip, slide, spin or fall.

Slip-proofs stairs, floors, ramps, catwalks, shower rooms, entrances and transportation equipment. Resists acids, alkalies, greases, oils, solvents. Gives a smooth, uniform surface.

Your choice of colors in black, gray, yellow or red. For price, delivery and application information, please write MSA on your company letterhead. And ask us for specially prepared samples shown at right.

FREE SAMPLES! Carry out your own torture test. Dip other end of free prepared sample into any other surfacing material of your choice. Compare Dura-Grip's superior bonding qualities.



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Pittsburgh 8, Pennsylvania

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COMING EVENTS

in safety and related fields

Jan. 23-26, Chicago.
Plant Maintenance & Engineering Show (International Amphitheatre). American Chain & Cable Co., Inc., 929 Connecticut Ave., Bridgeport 2, Conn.

Jan. 26, New York City.
Sanitation Management Seminar (Hotel New Yorker). Metropolitan New York Chapter of Institute of Sanitation Management, P. O. Box 51, Old Chelsea Station, 217 W. 18th St., New York 11.

Feb. 2-3, Milwaukee, Wis.
Nineteenth Annual Mid-Winter Safety Conference and Exposition, Wisconsin Council of Safety, Inc. (Hotel Schroeder; Plankinton House). R. W. Gillette, executive director, 119 E. Washington Ave., Madison 3, Wis.

Feb. 9-10, Los Angeles.
Eleventh Annual Governor's Industrial Safety Conference (Biltmore Hotel). Michael Flagg, coordinator, 455 Golden Gate Ave., San Francisco 2.

March 1-2, Philadelphia.
Twenty-seventh Annual Regional Safety and Fire Conference and Exhibit (Bellefue-Stratford Hotel). Harry H. Verdier, Safety Council, Chamber of Commerce of Greater Philadelphia, 121 S. Broad St., Philadelphia 7.

"Granbeck! What's this I hear about your not keeping your work area clean?"

Mar. 5-7, Atlanta, Ga.
Southern Safety Conference & Exposition (Atlanta Biltmore Hotel). W. L. Groth, executive director, PO Box 8927, Richmond 25, Va.

Mar. 14-15, Fort Wayne, Ind.
1961 Northeastern Indiana Safety Conference and Exhibit. Ivan A. Martin, manager, Fort Wayne Safety Council, Chamber of Commerce Building, Fort Wayne, Ind.

Mar. 28-30, Los Angeles.
Eighth Annual Western Safety Congress and Exhibits (Ambassador Hotel). Joseph M. Kaplan, manager, Greater Los Angeles Chapter—NSC, 3388 W. Eighth St., Los Angeles 5.

April 3-4, Boston.
Fortieth Annual Massachusetts Safety Conference and Exhibit (Hotel Statler Hilton). Sponsored by Massachusetts Safety Council, Safety Council of Western Massachusetts, and Worcester County Safety Council. Bert Harmon, manager, Massachusetts Safety Council, 54 Devonshire St., Boston 2.

April 10-11, Toronto, Ont., Canada.
Forty-fourth Annual Meeting and Safety Show (Royal York Hotel). R. G. D. Anderson, Industrial Accident Prevention Associations, 90 Harbour St., Toronto 1.

April 11-13, Lansing, Mich.
Thirty-first Annual Michigan Safety Conference (Civic Auditorium). K. S. Hedges, executive secretary, c/o General Motors Corp., Detroit.

April 12-14, Gainesville, Fla.
Eighth Annual Conference on Accident Prevention Engineering (University of Florida). Donald B. Wilcox, conference coordinator, College of Engineering, Department of Industrial Engineering, University of Florida, Gainesville, Fla.

April 26-27, Indianapolis, Ind.
Central Indiana Safety Conference and Exhibit (Claypool Hotel). Jack E. Gunnell, Indianapolis Safety Council, 320 N. Meridian St., Indianapolis.

May 1-3, Syracuse, N.Y.
Seventh Biennial Central New York Safety Congress and Exposition (Hotel Syracuse). Vincent P. Coulon, c/o Sealright-Oswego Falls Corp., Fulton, N.Y.

May 4-6, Norfolk, Va.
Twenty-seventh Annual Conference, Virginia Safety Association (Hotel Monticello). Hiram M. Smith Jr., Virginia Safety Association, 810 Mutual Bldg., Ninth and Main Sts., Richmond 19, Va.

May 8-10, Bethlehem, Pa.
Thirty-fourth Annual Eastern Pennsylvania Safety Conference (Hotel Bethlehem). Harold A. Seward, secretary-treasurer, Lehigh Valley Safety Council, 602 E. Third St., Bethlehem, Pa.

May 9-11, Niagara Falls, N.Y.
Twenty-first Western New York Safety Conference (Hotel Niagara). P. O. Box 315, Niagara Falls, N.Y.

May 10-12, Durham, N. C.
Thirty-first Annual North Carolina Statewide Industrial Safety Conference (Jack Tar Durham Hotel). H. S. Baucom, N. C. Industrial Commission, Raleigh, N. C.

May 18, Green Bay, Wis.
Thirty-third Fox River Valley and Lake Shore Regional Safety Conference. J. A. Long, Bay West Paper Co., Green Bay, Wis.

June 13-14, Hartford, Conn.
Connecticut Safety Conference (Hotel Statler). Charles Wooding, conference chairman, Wallingford Steel Co., Wallingford, Conn.

June 15-17, Carbondale, Ill.
Eighth Annual Conference of Campus Safety Association. James A. Aaron, program chairman, Safety Education Center, Southern Illinois University, Carbondale, Ill.

Aug. 13-17, Detroit, Mich.
1961 Meeting of American Trucking Association's Council of Safety Supervisors (Hotel Fort Shelby). Bernard Goodrich, A.T.A., 1424 16th St. N.W., Washington 6, D. C.

Oct. 16-20, Chicago
Forty-ninth National Safety Congress and Exposition (Conrad-Hilton Hotel). R. L. Forney, secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11.

It is estimated that 27% of industry accidents are eye accidents. 3% are injuries *to* eyes, but an additional 24% are caused by poor vision due to faulty eye protection. Official government estimates show these eye-accidents cost industry millions of dollars each year. Further, poor sight holds back production anywhere from 25% to 40%. No wonder foul sight is one of your largest safety-efficiency problems.

Both types of MAGIC Cleaning Stations are Science's answer to foul sight. For goggles and glasses stay dirty and dangerous unless you make it as easy as possible to clean them. Choose the type station to fit your conditions:

About the MAGIC Lens Tissue that polishes and protects lens as it cleans: Unmatched in quality, it far exceeds scientific specifications. Each sheet is BIG. It's 50% larger than usual and has twice the tearing strength. One sheet is big enough to clean the largest safety goggles. Every square inch is packed with Silicone's Sparkle Power — on both sides of the sheet. It is interfolded, serving only one sheet at a time — not in bunches. And that's an exclusive feature with MAGIC. Yet it costs less. The compact dispenser is self-mounting; no screws, no drilling. Just stick it to the wall. No maintenance. No adjustments. No wear. No moving parts. Absolutely indestructible.

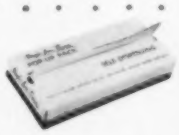
About the MAGIC Heavy-Duty Lens Cleaning Station: It's for dirty, oily areas or where Anti-Fog protection is needed — on plastics or any eyewear. MAGIC combined Cleaning & Anti-Fog Fluid combines all needed ingredients. And it's pressure-packed. Just touch the can and — *PRESTO* — the can does the rest. 1,400 applications per can. One can equals 4 old-fashioned bottles. No pump. No bottles to refill. Indestructible dispenser — with no moving parts — releases sheets 1-by-1, not in bunches, greatly reducing waste. Or, to use your home-made fluid, we can supply our Adapter ($2.70) with a giant 16-oz. bottle and plunger complete. MAGIC Heavy-Duty Paper, not silicone-treated, is superb, strong, wet-strength paper. Like its sister-product, the world's finest quality. No scratching on plastic, and no lint.

Buy the leader and save money. Buy MAGIC. Exchange all your other stations for MAGIC FREE.

Magic Silicone Lens Tissue (6 refills (800) sheets ea.)	Ctn.	$ 8.40
Magic Lens Tissue Dispenser FREE WHEN EXCHANGED	ea.	2.50
Magic Heavy Duty Dispenser FREE WHEN EXCHANGED	ea.	5.95
Magic Cleaning & Anti-Fog Fluid (Twelve-12-oz. cans)	Ctn.	12.50
Magic Heavy Duty Paper (18 giant refills (760) sheets ea.)	Ctn.	11.60

All prices F.O.B. Shipping point

MAGIC Pop-up pack in self-dispensing box for your desk or any place in the office, plant or laboratory, $11.95 per carton of twelve boxes.



MAGIC Silicone Lens Tissue

MAGIC Heavy-Duty Cleaning Station

Serving Every Major Industry in America

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IDEAS THAT WORKED

Devices and Ideas to Help Your Safety Program

By ARTHUR S. KELLY, Industrial Department, NSC

Clipping-Posters Underscore Regulations

MOST PEOPLE are fair-minded enough to be willing to comply with almost any request, if they know the reason behind the request. This applies to safety rules as well.

To emphasize the importance of safety regulations and to keep the reasoning behind them fresh, newspaper clippings have been used in this Idea That Worked, submitted by R. A. Koy, United States Gypsum Company, New Orleans, La.

Mr. Koy took newspaper stories, such as those illustrated here, and made posters of them, inserting pertinent safety information which applied in each case.

This approach offers the foreman an opportunity to stress reasons for specific safety rules and makes the idea quite effective. A number of regulations have been covered in this manner—whenever an instance relates to a specific safety problem.

EXPERIENCE TEACHES
THE TIMES-PICAYUNE NEW ORLEANS STATES, SUNDAY, AUGUST 17, 1958
Police Check Scene of Shipyard Accident
KNOWING'S NOT ENOUGH
CABLE LASHES CRANE WORKER
Operator Seriously Hurt in Shipyard Accident
UNITED STATES GYPSUM COMPANY
NEW ORLEANS LOUISIANA
GENERAL SAFETY RULES FOR ALL EMPLOYEES
THINK
Are You SURE It Could Never Happen To You?

On-Job Photos Spur Safety

WE HAVE HAD ideas similar to this submitted before, but we like the way this one is handled and are glad to show it to readers of the NATIONAL SAFETY NEWS.

The Idea has been developed by Robert Muller and Clement J. Kueper, Marathon, A Division of the American Can Company, Menasha, Wis.

During trips around the plant Kueper and Muller make special note of an employee faithfully following proper safe work procedures and wearing prescribed personal protective clothing or equipment.

One of these two safety men returns to the scene with his camera and takes a photograph of the employee on the job. Two copies of a folder similar to the one shown top left are made up, each containing an enlarged copy of the photograph and the inscription "Safe Worker of the Month."

Later, the winner and his foreman are called to the superintendent's office (see bottom left), where the safe worker receives a suitably marked merchandise award and a copy of the folder containing his photograph and the inscription. The other copy of the folder is filed in the superintendent's office.

Additional publicity is obtained through posting the photographs and a brief story of the event on the bulletin board.

This idea has been submitted by H. H. Aderhold, safety coordinator at Marathon.

My Aching Clavicle!

P. J. ROGERS, Shell Pipe Line Corp., Brownfield, Tex., says: "The device pictured is an idea of mine I had used in first aid training classes. The top part of the box is attached to a double-paned frame holding a good X-ray picture of the upper chest cage with a broken clavicle. The bottom part of the box is painted white and has an electric light. When the light is turned on, the reflection through the picture frame brings out the broken clavicle." This is an effective warning to prospective victims.

Winner

December prizewinner was "Magnetic Flag." Hazards found are tagged with yellow magnetic-based flag, warning workers until hazard is removed. Submitted by D. G. Collins, employment supervisor, U.S. Gypsum Co., South Gate, Calif.

External Radiation Protection: Time Distance Shielding

These three factors face every fire chief and his crew in solving a radiation blaze problem

Shielded by massive concrete walls, this scientist uses remote-control handling devices. By the use of the dual TV screen and polarized spectacles, he sees his work in three dimensions. (Photo by Argonne National Laboratory at Lemont, Illinois.)

By FRANCIS L. BRANNIGAN and GEORGE S. MILES

PROTECTION from external radiation is accomplished by combinations of *time, distance,* and *shielding.*

Time. We should understand the use of time in administrative regulations of radiation exposure in atomic energy plants. Sometimes this leads to signs posted limiting the time an employee can remain in a certain area.

For instance, a sign is posted limiting the time in an area to one-half hour. After the smoke has cleared away, one of our fire-fighters sees the sign and realizes he has been in that area for an hour. A potential problem arises.

The problem may be accentuated, if our firefighter talks to employees in the plant. It may be that all the employees understand is: there is a great deal of fuss raised if anybody remains in that area for more than one-half hour, and therefore, an exposure over that level must be quite serious. The solution of the problem is: through the department training program the firefighter learns to distinguish between the permissible level of exposure on a day-in day-out basis for the atomic energy worker and the much higher level of exposure permitted to personnel, such as firefighters, in an emergency situation.

Let's consider a problem involving rotation of personnel. The problem really is not a practical one, but it does give us an exercise in radiation arithmetic.

A victim is trapped in an area

Primarily, distance is relied on for radiation protection. (Photo by U.S. AEC, Idaho Falls)

The authors are nuclear safety specialists of the U. S. AEC. This material has been adapted from *Living with Radiation, Part 2 —Fire Service Problems,* which is available in booklet form.

where the radiation level is 200 r per hour. His removal requires no great skill, simply the manual handling of debris. Only 3 men can work on the rescue operation at a time.

We have 30 men available to do the job. It will take one hour to get the man out. We do not want any rescue personnel to get more than 25 r in the operation. How would you rotate the personnel?

One approach is to use all 30 men in 10 teams of 3 each. This means each man would get 1/10 of an hour's exposure, or 20 r. Another approach would be to use only 24 men in 8 teams of 3 men each.

This means 24 men would each receive 25 r and 6 men no radiation at all. Which 6 men should be excluded?

On the basis of possible genetic effect, one might argue the youngest men should be excluded. On the other, as the atomic age grows, it will be necessary for certain of our personnel to acquire much more technical knowledge than the average in the handling of radiation problems.

If we have personnel in whom we have invested a great deal of time and effort in their gaining such an education, it would appear to be foolish to use up their radiation exposure on a routine operation (moving bricks), which does not require the use of their specialized technical knowledge.

When faced with a problem of this sort in the cleanup after a fire, the management of one plant arranged for a series of persons, who would receive no other radiation exposure, to enter the high radiation area, remain long enough to accomplish a small portion of the cleanup, and then withdraw.

The time of exposure was regulated to keep the dose down. By this, they avoided unnecessarily high exposures to their own technically trained personnel, which might seriously interfere with future work on the project.

The basic principle is to limit exposure of personnel to radiation to the minimum time necessary to accomplish the task, and to involve the minimum number of personnel so the accumulated units of exposure will be the absolute minimum.

Distance. Distance is by far the most important means of radiation protection for the firefighter. We see the inverse-square law gives us a remarkably rapid fall-off in the radiation level of a point source as we move away from the source of the radiation.

Shielding. The important thing for the firefighter to remember about shielding is to take advantage of shielding provided or already existing naturally. There is no practical portable radiation shield.

Sometimes, men who observe the shield behind which an X-ray operator steps when he takes an X-ray picture get the mistaken idea a portable shield for radiation can be of practical service to fire departments.

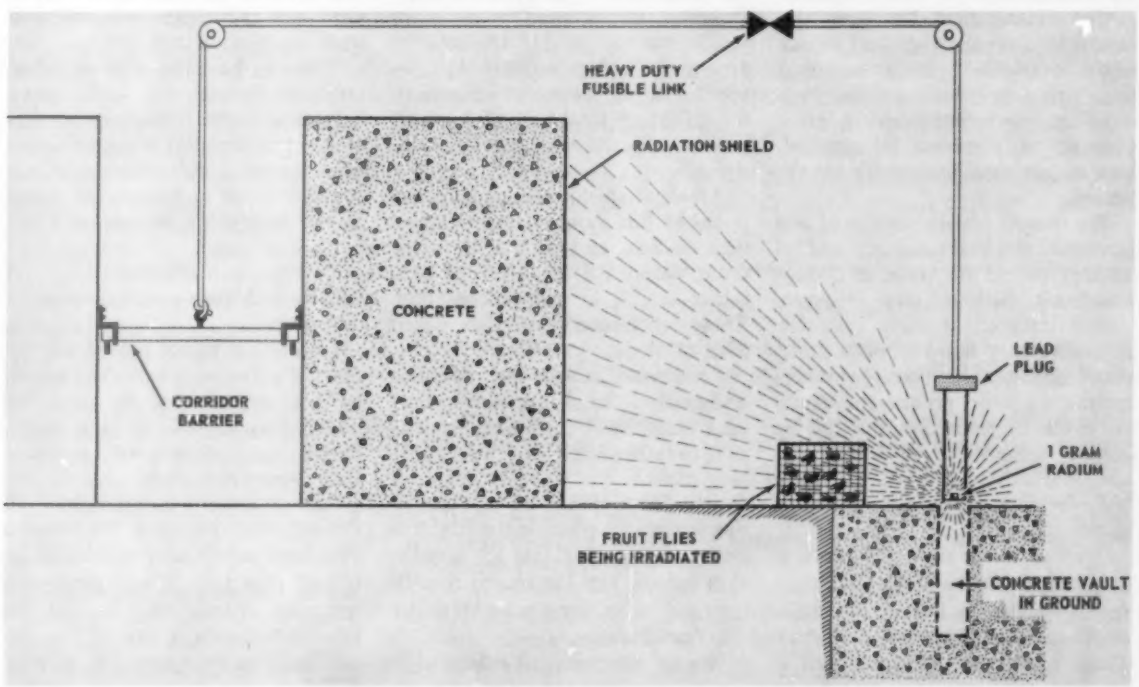
The X-ray operator is merely being protected from regular exposure to scattered rays which bounce from the floor, from the X-ray table, and from secondary radiations.

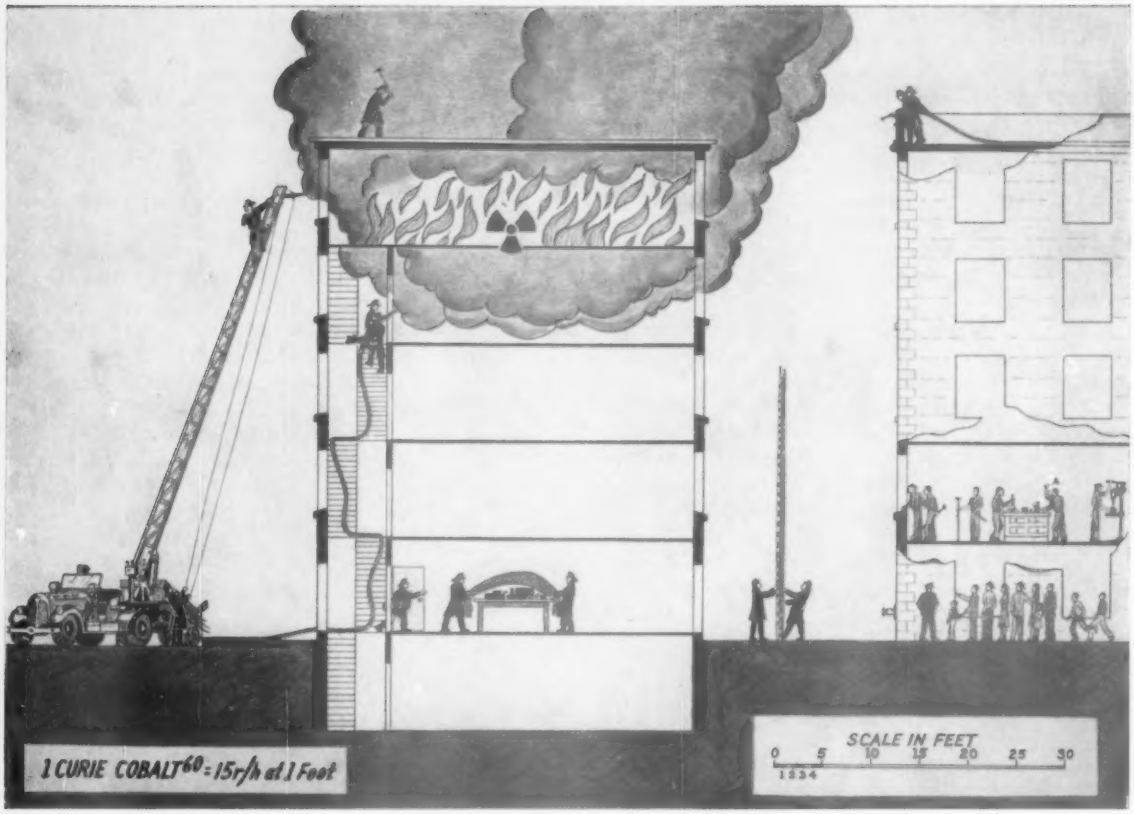
Fire drill procedure for a plant handling a radioactive source should require personnel in charge of the source to be responsible for placing the source in its shielded container before they leave the building in the event of a fire.

If it was not possible to place it in its container, they should so notify the fire department on its arrival.

If external radiation sources are

Fruitflies have long been used for the study of the genetic effects of radiation. In normal operation, raising the corridor barrier causes the radium to be lowered into the ground so that the room can be safely entered. In the event of fire, the heavy-duty fusible link will fail and drop the radium into the vault, to protect firefighters.





In this fire atop a five-story brick and wooden joist building, a radiation problem exists: a large cobalt source shielded by a lead container that might be destroyed.

left out when the plant is closed, as may happen in the radiography of massive pieces, the fire department might be instructed in the use of the equipment to recapture the source and return it to its container.

One arrangement has been designed to drop the radiation source into the shield in the event of a fire. This setup was installed in a building which contained a great amount of combustible material, and a fast, hot fire could be expected.

We should remain outside of any obviously shielded situation, and no attempt should be made to disrupt lead-brick shielding seen in place.

For instance, if there is a fire in a chemistry hood or on a table, and lead-brick has been provided around the table, no attempt should be made to extinguish the fire by getting behind the shielding until adequate advice can be obtained. No shielding should be disrupted to get at the fire.

We are aware that lead melts at low temperatures. Most containers for radioactive materials are made of lead with an outer shell of steel. These containers are not tested at the present time by any standard fire test methods. When the lead is molten, it will still have the same shielding properties. The cavity in the container could conceivably *float* to the highest point in the container. In at least one direction, the shielding would be of a much lower value than originally designed.

Any lead shielding containers exposed to fire should be approached with caution, and should be monitored, before it is assumed the container is still in proper condition. These containers are also called *pigs* or *casks*.

Lead is relatively low in value and costly to transport. Any melted lead found in a fire in a transportation situation, such as a truck, railway express car, truck terminal, or freight depot, should be viewed with suspicion. It is possible the lead was being used as shielding for a radiation source, and the source may be exposed, with consequent high radiation levels.

Water has certain value as a shield. While water is not as efficient as lead for penetrating external radiation, it is useful where workers must see radioactive material and work on it with tools.

This can be done with complete safety to the operator, with remote controlled tools, through many feet of water in a pool. (When we speak of water as a radiation shield, we consider water in a mass, not water in the form of a stream or water fog.)

Practice in problem-working will help us anticipate external radiation difficulties.

Consider a raging fire on the top floor of a five-story brick and wooden joist building at 3 a.m. The building is closed for the night. People are working in the machine shop across the alley.

The radiation warning symbol on the top floor indicates the location of a large cobalt source shielded by a lead container. These containers are made of lead cased in steel. We must assume in a fire of this in-

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This six-man board has four cabinet members and will provide top leadership, advice to federal agencies on traffic safety

President Establishes

Highway Safety Board

By HARRY N. ROSENFIELD
Washington Counsel, National Safety Council

SAFETY, like other national interests, awaits the new administration's outline of programs and plans for the future. In the meantime, safety activities continue.

Federal Interdepartmental Highway Safety Board. The President established the Interdepartmental Highway Safety Board with these functions:

To provide leadership to and coordinate the traffic safety aspects of programs carried on by federal agencies;

To evaluate traffic safety research needs and formulate plans, priorities, and programs of "the most urgently needed research";

To consult and cooperate with state and local officials, the motor vehicle industry "and other related interests, in the development and improvement, and particularly in the applications, of traffic safety standards in areas such as uniform traffic laws, enforcement practices, accident records, driver licensing, motor vehicle equipment and inspection, traffic engineering, and safety education";

To conduct continuing studies of "national traffic safety needs as they relate to legislative and administrative actions by the federal government"; and

To perform other functions, as directed, "to insure an orderly relationship among federal, state, and local traffic safety programs."

The board is authorized to submit periodic reports to the President "on the national progress in traffic safety" and is specifically directed to include in its first report "determinations of the status of federal legislative and administrative needs in the several areas of traffic safety and recommendations for executive or legislative action."

In issuing the order the President said: "The board will also consider the federal role in the establishment of standards of broad national value to traffic safety" and "will facilitate the coordination of the planning programs for traffic safety that involve financial, technical, and other substantive federal participation."

The board, whose creation was suggested by the Secretary of Commerce in 1959 (See "Wire," April 1959), is to be composed of the Secretary of Commerce, as chairman; the Secretary of Defense; the Postmaster General; the Secretary of Health, Education, and Welfare; the Chairman of the Interstate Commerce Commission; and the General Services Administrator.

The board is to act as advisor to federal agencies. The President's Committee for Traffic Safety shall serve as the board's consultant and advisor.

President's Commission on National Goals. The President's Commission on National Goals submitted its report "Goals for Americans." It contains several items of interest to safety:

"Roads and rapid transit facilities should be planned and financed as a unit, and effective regional planning should deal with all transportation, industrial location and government-assisted housing plans";

"Expenditures at all levels of government for . . . transportation systems . . . will certainly rise materially . . .";

"The study of environmental health measures should be increased. We need to mobilize our resources better to understand such problems as air and water pollution, radiation hazards, and food additives. This is necessary in order that the government may formulate wiser policies of regulation."

Industrial Safety. The chairman of the Congressional Special Sub-

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THE MONTH IN WASHINGTON

- **AEC issues new regulations establishing radiation safety requirements for persons using sealed sources of by-product material for radiography.**
- **ICC defers until January 1, 1963, compliance date of order requiring not less than 66⅔ per cent of each railroad's locomotive units to meet new rules and instructions for inspection, testing of locomotives.**
- **ILO governing board places on agenda for 1962 International Labor Conference the question of banning sale, hire, or use of improperly guarded machinery.**
- **USPHS issues notice of proposed rule-making, to provide for revision and redesignation of tests presently included in standards for safety of biologic products.**

This report is an information service. Publication does not imply National Safety Council approval of or opposition to any legislation mentioned

Paul Jones, left, talks safety with Aramco employees, N. A. Scardino, right, district manager of Dhahran, and Shalhoob Fadgoosh, gate controlman. Main gate bears safety slogan, "Take Safety Home," in English and also in Arabic.

NSC's Paul Jones tours Aramco during a 28-day, 26,000-mile, 28-speech survey of worldwide safety activities

Yankee Salesman Scans Safety Overseas

By PAUL JONES

NSC consultant on special projects and former Council public information director.

YOU MIGHT THINK that one of the last places in the world you would find a shining example of modern accident prevention is in the midst of the Saudi Arabian desert.

But there it is!

And maybe you have the feeling that when down under in Australia they may not be so hep to safety.

But they are!

Those are just a couple of the encouraging facts a safety man runs into when he drops in on the folks in Arabia and Australia to compare notes on what's new and different in the worldwide business of preventing accidents.

Out on the Saudi Arabian desert, shimmering in the relentless glare of a sun which seems to have no trouble at all in shooting the temperature up to 120 degrees, the Arabian American Oil Company—known to one and all as Aramco—is proving continuously and spectacularly that climate and location are no bar to an excellent safety program if you really want one.

And in Australia—a long sleeper jump from the good old U.S.A.—the visitor finds little if any fundamental difference between the two countries in the skill, enthusiasm and sincerity with which the accident problem is being attacked—on and off the job. The biggest difference, of course, is that in the United States there are more workers, more cars, more mileage and mishaps.

Aramco and its employees have performed so many miracles in overcoming nature's little whimsies that the outstanding Aramco safety achievements could be taken almost for granted—if you want to overlook the fact that about four out of five of the 16,000 employees in the company's Saudi Arabian operations are native Saudis—and that out there on the desert you are a long way from a lot of things people in the United States think are essential to preventing accidents.

It was only natural, of course, that to this eager visitor the accident prevention record of Aramco took top billing over the company's other amazing accomplishments. For not only is the Aramco safety record very good, but it was the reason my wife Edith and I were

given the chance to visit Saudi Arabia and see a part of the world relatively few people ever have a chance to see.

Our first glimpse of Aramco efficiency came in the speed with which the hurdles were cleared to get us on our way. In no time at all we had our passports, our visas, our health shots, and our briefing. Credit for this, in my book, goes to T. J. Faughnan, manager of personnel and administrative services for Aramco, and his wonder man Charlie Lister, whose patience, skill, and unfailing genialty are beyond description. But I suspect that NSC's executive vice-president, Gen. George C. Stewart, and my secretary and real boss, Marie Burroughs, have plenty of reason to believe they were in there pitching, too.

And we hadn't been aboard the big Aramco DC6B plane at the Idlewild International Airport in New York City two minutes until we got a first-hand example of Aramco's policy on safety.

"There will be a slight delay in take-off," the plane's skipper, Capt. Vic Crawford, was saying over the intercom, "because of mechanical difficulty with one of our automatic horizon finders. We could use the other finder, of course, but we want to take no chances on anything."

You can't imagine how reassuring this allegiance to safety was to a guy who can't swim a lick, and who at that very moment was gazing dubiously at a flight map which showed a lot of water between New York and Amsterdam!

We paused in Gander, had a delightful 36-hour layover in Holland, put down briefly in Rome and Beirut (where the eggs taste like fish because they feed fish to the chickens), and landed in Dhahran, Saudi Arabia, early Saturday afternoon. We had left New York Wednesday afternoon.

But the next morning the slave drivers put me to work, and there wasn't an idle moment from then until we shoved off for Australia four days later.

The Aramco operations in Saudi Arabia with which I was concerned consist of three districts—Dhahran, Ras Tanura, and Abqaiq.

Dhahran is administrative headquarters for Aramco operations in Saudi Arabia. At Ras Tanura—40 miles across the desert from Dhahran—are the refineries and the huge marine terminal to which ocean-going tankers come from all over the world to take away cargoes of oil. The Abqaiq district handles actual production of the oil—and Aramco is extracting 1,200,000 barrels of oil a day from the sands of the Saudi Arabian desert. Abqaiq also is 40 miles from Dhahran—but in the opposite direction.

What did Aramco as a company and its three districts in Saudi Arabia do in 1959 to win three Awards of Honor—National Safety Council's top award—and an Award of Merit? Just this:

Dhahran District: Reduced the accident frequency rate among its 4,878 employees from 2.90 in 1958 to 1.13 in 1959, and the severity from 318 in 1958 to 309 in 1959.

Ras Tanura District: Reduced the accident frequency rate among its 4,813 employees from 1.95 in 1958 to .92 in 1959, and cut the severity from 457 in 1958 to 43 in 1959.

Abqaiq District: Reduced the accident frequency rate among its 4,235 employees from 4.54 in 1958 to 2.82 in 1959, and cut its severity from 1,638 in 1958 to 1,084 in 1959.

Aramco Companywide: Reduced

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Norman Hardy, right, chairman of board of Aramco, receives NSC Award of Merit from Paul Jones for firm's outstanding safety record. Presentation was made in Dhahran, Saudi Arabia, for company's 1959 achievement in attaining rate of 1.9 disabling injuries for each million man-hours worked by employees.

Jones addresses Road Safety Congress of New South Wales at its opening session in Sydney, Australia. With him (l. to r.) are Premier Heffron of New South Wales; Minister for Shipping and Transport Opperman; Dr. Frank S. Hansman, chairman of the congress; and Minister for Transport McMahon.

THE SAFETY LIBRARY

Reviews of books, pamphlets and periodical articles of interest to safety men

By LOIS ZEARING, Librarian, NSC

Managerial Skills For Supervisors

Managerial Skills for Supervisors. By Glenn L. Gardiner and Associates. Elliot Service Company, Mount Vernon, N. Y. 1960. 134 pp. $3.95.

TWELVE MANAGERIAL skills basic to supervisory proficiency are presented in this book. The 12 skills mentioned are:

Managing your time, planning, decision making, communication, talking effectively, memo and report writing, reading faster and better, selling your ideas, judging people, exercising authority, developing people, and self development. To cover each one of these subjects in detail in a book of 134 pages is impossible. The author and his associates provide effective guideposts valuable to the supervisor serious about self development.

Each chapter has a "Self-Check Review" that allows the reader to make a self-evaluation of his particular skills. This book is a good reference for self development.

L. C. SMITH

BOOKS AND PAMPHLETS

Conferences

The President's Conference on Occupational Safety, March 1-3, 1960: Proceedings. 1960. 269pp. U. S. Department of Labor, Bureau of Labor Standards, Washington 25, D. C. (Bulletin 218)

Explosives

Tentative Safety Recommendations for Field-Mixed Ammonium Nitrate Blasting Agents. 1960. 12pp. Publications Distribution Section, U. S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa. (Information Circular 7988)

Fire Protection

National Fire Codes, 1960-1961. 7 vols. 181 separate standards. 5614 pp. $7 per vol. $40 for 7 vols. National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass.

Vol. I. Flammable Liquids and Gases; Vol. II. Combustible Solids, Dusts, Chemicals and Explosives; Vol. III. Building Construction and Equipment; Vol. IV. Fixed Extinguishing Equipment; Vol. V. Electrical; Vol. VI. Transportation; Vol. VII. Mobile Fire Equipment, Organization and Management.

Mines

American Standard Practice for Rockdusting Underground Bituminous-Coal and Lignite Mines to Prevent Coal-Dust Explosions (ASA Standard M 13.1—1960, UDC 622.81). 1960. 5pp. Publications Distribution Section, U. S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa. (Information Circular 8001)

Combustion of North Dakota Lignite in Domestic Heaters. 1960. 52pp. Publications Distribution Section, U. S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa. (Report of Investigation 5681)

Injury Experience in Coal Mining, 1957. 1960. 72pp. U. S. Bureau of Mines, Superintendent of Documents, Washington 25, D. C. (Information Circular 7987) Price 45¢.

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"Still got ten of them? Bully for you!"

ADDRESSES OF MAGAZINES

Readers are asked to send their requests for copies of magazine articles to the publishers. The NSC Library is unable to fill such orders.

Air Engineering, 450 W. Fort St., Detroit 26.

American Gas Association Monthly, 420 Lexington Ave., New York 17.

Archives of Environmental Health, 535 N. Dearborn St., Chicago 10.

Best's Fire and Casualty News, 75 Fulton St., New York 38.

Better Roads, 173 W. Madison St., Chicago.

Coal Age, 330 W. 42nd St., New York 36.

The Constructor, A.G.C. Bldg., 1957 E St., N. W., Washington 6, D. C.

Construction Methods and Equipment, 330 W. 42nd St., New York 36.

Electric Light and Power, 6 N. Michigan Ave., Chicago 2.

Electrical World, 330 W. 42nd St., New York 36.

Engineering News-Record, 330 W. 42nd St., New York 36.

Factory Mutual Record, 1151 Boston-Providence Turnpike, Norwood, Mass.

Hospital Management, 1319 F St., N. W., Washington 4, D. C.

Industrial and Engineering Chemistry, 1155 Sixteenth St., N. W., Washington 6, D. C.

Industrial Hygiene Journal, 1014 Broadway, Cincinnati 2, Ohio.

Industrial Medicine and Surgery, P. O. Box 44-306, Miami 44, Fla.

The Inland and American Printer Lithographer, 79 W. Monroe, Chicago.

Journal of Occupational Medicine, 28 E. Jackson Blvd., Chicago 4.

Journal of the American Medical Association, 535 N. Dearborn, Chicago 10.

Marine Engineering/Log, 30 Church St., New York 7.

Modern Sanitation and Building Maintenance, Easton, Pa.

Pulp and Paper, 1791 W. Howard St., Chicago.

Roads and Streets, 22 W. Maple St., Chicago 10.

Statistical Bulletin, One Madison Ave., New York 10.

Supervision, 404 N. Wesley Ave., Mount Morris, Ill.

Supervisory Management, 1515 Broadway, New York 36.

Textile World, 330 W. 42nd St., New York 36.

The Timberman, 519 W. Park Ave., Portland, Ore.

Design It Right . . . Build Safety In

Standards for electrical and mechanical equipment that protect both the machine and the operator

By FREDERICK J. KIRCH

President, International Management Institute, Syossett, N. Y.; formerly Head, Design and Drafting, Arma Division, American Bosch Arma Corp., Garden City, N. Y.

FOR MANY YEARS efforts have been directed successfully to guarding operators against accidents. Results have been excellent, but the increasing complexity of equipment has caused us to give more consideration to designing as much safety as possible into the equipment.

Any design represents a compromise. Our product must have a certain prestige value to make people want to own it. It must be reliable, easily maintained, and operable within limitations of human abilities. It must be competitive in price and inherently safe.

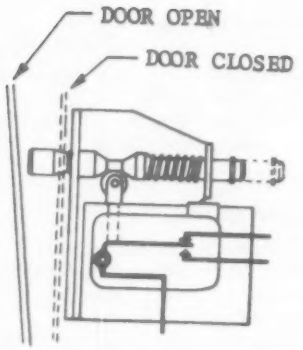
That is a tall order, and we still don't know all the answers. But over a period we have developed a set of safety standards for the guidance of our designers.

Initially we attempted to introduce parallel standards—one to assure safety of the equipment and another to protect the operator. It soon became apparent that the two were inseparable. Accordingly, our standards reflect this community of interest and objective.

We do not regard these standards as the ultimate. But we have made a start, and we believe experience will enable us to design equipment that will continue to reflect the latest technological advances combined with the basic concept of operational safety.

Much information in our standards will be regarded by professional safety engineers as elementary—something everyone knows. But our standards are directed to designers, not to trained safety personnel. Besides, what everyone knows is most often ignored.

In establishing design objectives we ask our designers to consider safety standards outlined here.



The interlock switch, one of the oldest electrical safety devices, can be used effectively on many types of equipment.

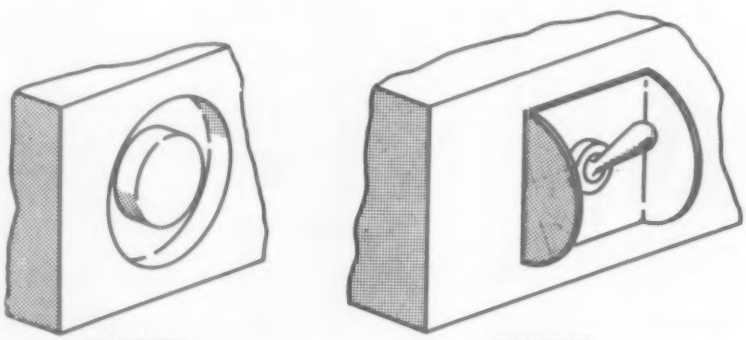
I. Safety—General.

This standard provides basic design considerations for electrical and mechanical safety. It refers to design considerations which prevent accidental functioning, displays which indicate malfunctions, and personal protection—i.e. operational and personnel safety.

General. Modern electronic equipment is easily damaged by improper handling. Electrical and mechanical controls and displays may be crammed together on small panels. Connectors, outwardly identical, carry widely differing signals and voltages. Gear boxes may have several power shafts of similar appearance, yet have entirely different capacities.

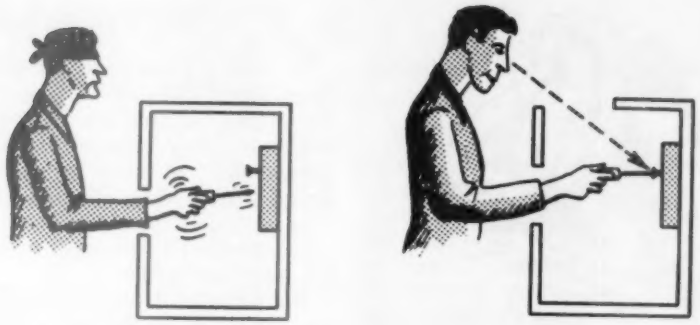
It is essential that the technician be prevented from incorrectly reading, setting, or matting these items. It is equally important to minimize the spread of localized failure to other components, and to protect the operator.

Coding. Controls and displays may be simplified by coding to indicate function, status, direction or magnitude. Coding is commonly



Controls and indicators located near operating areas should be guarded or recessed to prevent accidental contact with the operator's body.

This article was adapted from a paper presented at the 30th Annual Safety Convention, Greater New York Safety Council.



Don't blindfold the technician. Cramped quarters and poor visibility are not conducive to safety or accurate work.

accomplished by location, shape, size, labeling, and color.

Location. Placement of controls and displays improves related and sequential function and may guide anticipatory reactions.

Shape can be used to indicate function or direction and to provide optimum operating surfaces.

Size is a good criterion for force or speed of control or display. Size can emphasize major items.

Labeling, properly executed, is a very effective tool for safety. The operator must always be certain of the identity of every item under his jurisdiction. Labeling can offset lack of familiarity which troubles technicians with the advent of each new design.

Color. Perhaps the most powerful safety coding is the use of color, which is well advanced in such fields as circuitry. People react to bright red lights or black and yellow warning stripes.

Fail-safe provisions and protective devices. A device which can cease functioning without causing further harm to itself, associated equipment, or the operator is considered "fail-safe." Redundant circuits are often employed as safety devices. Warning devices to indicate malfunctioning are desirable and often combined with fuses, interlocks, slip clutches, and shear pins to increase protection.

Personnel protection. Possible hazards to operators and service personnel must not be overlooked.

Electrical hazards. Available tables specify the exact amount of current and voltage tolerated by the human body: 70 volts is considered the maximum potential consistent with safety, and currents as low as 5 milliamperes can immobilize the operator by cramping the muscles.

Even the mildest shock is dangerous because of violent reactions caused. Concussions and bruises resulting from mild shocks far exceed cases of serious electrical burns. Technicians working habitually with high-voltage equipment have a notorious disregard for attendant hazards. Careful attention must be paid to grounding and insulation.

Mechanical hazards. Safety considerations for mechanical devices are less involved. Moving parts must be shielded from each other and from the operator. Packaging must be sturdy enough to withstand handling. Maintainable items must be serviceable without incurring danger to the operator.

II. Safety—Mechanical.

This standard presents mechanical considerations for safety which include design factors for structures, fastening, mountings, and assemblies.

Sheet metal, structural members, and fasteners. Prevent vibration or fatigue failures in sheet metal items by calling out adequate bend radii.

Enclosures, especially those frequently handled, must be fabricated with adequate welds, rivets, or bolts. Small units will be handled from all angles. Cases will receive the same rough treatment as bases and must be held together securely.

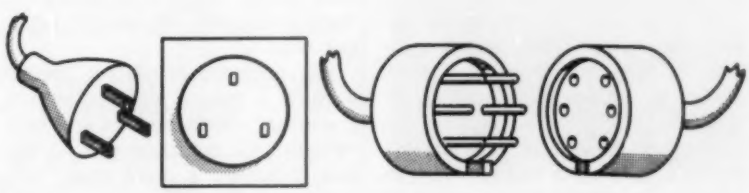
All nuts, bolts, and screws should be tightened with a torque wrench in cases where the crushing force can exceed the strength of the material being fastened.

Be sure lock washers specified are correct for strength and function as well as nominal size.

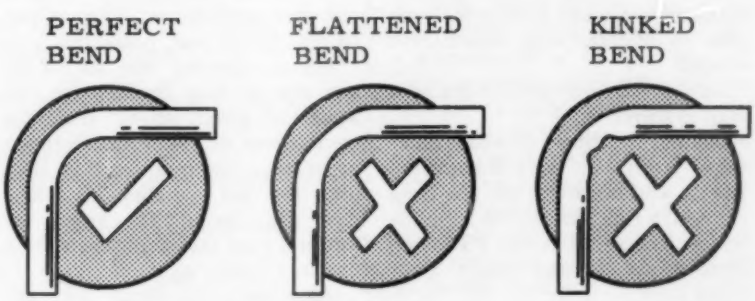
Dzus and similar patent fasteners have definite ratings in shear and tension. Consider these limits before specifying fasteners.

As with patent fasteners, ordinary hardware such as screws and bolts must be adequate for loads

—*To page 92*



Electrical plugs should indicate clearly, by shape of prongs or keys, the receptacles intended to receive them or direction of insertion.



Examples of good and bad tube bends.

(Fiction) **By BILL ANDREWS**

Our Safety Engineer has his first interview with the new top brass on the job and, thanks to having the facts—and the guts to present them—gets off to a fair start with the boss

The New Manager

January 4, 1961

THE PROJECT has a new manager.

I can't say that John Burton was any great friend of mine—but he and I had gradually built up a considerable degree of mutual respect. Also I learned to understand his ideas about his work, and he developed considerable sophistication about the terminology of safety work.

True, I sometimes felt he was overly conservative and reluctant to provide the means for an adequate safety program, and he sometimes accused me of being a fanatic with a one-track mind.

Still, as I said, we had a basic understanding, and on that we were able to operate with constructive results.

In a word, I was sorry to see John Burton leave.

Harold Hastings arrived yesterday—a blond, gray-flannelled Iowan who comes to us, not from his native Des Moines but from assorted enterprises in the Piedmont, New England, and finally New York City.

His first meeting with the executive staff was routine enough. We assembled in his office to be told by him that he was glad to be back in the Middle West, that he was honored to follow in the footsteps of such a fine leader as John Burton, and that he looked forward to knowing us and sharing in our work.

He concluded by saying, "Before we have a general planning session, I want to talk to each of you individually. I'll schedule you at one hour intervals. I don't expect you to blueprint details of program and changes. But I want a quick overview, plus your own idea of the strategy of your job and your major unmet needs. My secretary will give you your appointment times as you go out. Thank you, gentlemen."

My appointment was set for 11 a.m. this morning. By that time, the word had gotten around from the interviewees of yesterday afternoon and earlier this morning that Hastings was not spending his whole days interviewing. The hourly interviews were taking anywhere from five to 15 minutes.

Also, as Luke Smith told me, "Don't waste any time briefing this character. He knows the content of my last few monthly reports better than I do."

So when I walked into the manager's office, I was not surprised to see stacked on Hastings' desk between the silver elephant and the framed photo of a boy in military school uniform, a file of my monthly reports, and another file of special proposals I'd submitted to Burton from time to time.

But I confess I was surprised to see a copy of the December issue of the NATIONAL SAFETY NEWS, open to the eye and foot protection survey article.

Hastings had a good handshake and was willing to devote all of 30 seconds to establishing a warm, personal feeling before he said crisply, "Now tell me about your work, your hopes, and your needs."

"My work is to try to help the managements of enterprises on the project to eliminate accidents and to provide direct safety services for the project's own staff. My hope is to do it better. My needs are the continued cooperation of the project's top executive and about 25 per cent more money.

Hastings' face showed neither pleasure at my brevity nor displeasure with my curtness. Instead, without referring to the reports, he said, "You had a bad year. An accident increase of 14 per cent. Your budget was up 10 per cent above 1959's level. What happened?"

I pointed out to him that the 14 per cent increase was in severity rates, and that it came entirely from the series of troubles we had last summer. Frequency was down 12 per cent, and severity was—July and August excluded—down 42 per cent.

Then he asked what I wanted the money for, and I told him I wanted another safety engineer on my staff, plus a larger budget for educational materials and other small items.

"And will that drastically reduce the number and severity of accidents?" he asked.

"I hope it will, in the long run, contribute to the reduction of accident rates," I said.

"That's a well-hedged answer," Hastings snapped.

"Is it more hedged," I asked, "than the answer you would give, if some board chairman said, 'If we make you the operating execu-

tive, will you boost our profits?' "

Hastings laughed, loudly. "Touché. I was asked almost that question before I took this post, and I gave the same kind of answer you gave me. Anyway, this is not a decision-making interview. Go back and draft me a memorandum justifying a budget increase of 15 per cent, and let me see it by Monday."

"I need 25 per cent, not 15 per cent," I said. "I can't hire half a safety engineer."

"Make it 20 per cent," he said.

And on that happy note of push-cart haggling ended my first interview with our new manager.

But there's just one thing I'm mightily curious about. Does Hastings really know enough about safety to pick out a good technical article in the NATIONAL SAFETY NEWS to spread out on his desk to impress me? Or did he call up some professional safety man and get his advice? I don't suppose I'll ever know.

Graduate Fellowships in Industrial Medicine

The University of Cincinnati's Institute of Industrial Health is offering graduate fellowships in industrial medicine. The Institute, in the College of Medicine, provides professional training for graduates of approved medical schools who have completed one year of internship.

The three-year program leading to the degree of Doctor of Industrial Medicine satisfies requirements for certification in occupational medicine by the American Board of Preventive Medicine.

Two years are devoted to intensive academic and clinical study in industrial medicine. A third year is spent in residency in an industrial medical department or in some comparable organization.

Stipends for the first two years vary from $3,000 to $4,000 depending on marital status. In the final or residency year the fellow is compensated by the organization in which he is completing his training.

Also, a one-year course is available to applicants who wish to become candidates for the degree of Master of Science in Industrial Health. In addition, a three-year academic program, leading to the degree of Doctor of Science, is available to applicants pursuing careers in teaching and research. Fellowship stipends are available to candidates in these programs.

Contact: Secretary, Institute of Industrial Health, College of Medicine, Eden and Bethesda Avenues, Cincinnati 19, Ohio.

Part-Time Brains

BRAINS SNOW themselves as well as others.

Brains buy new cars with punctureproof tires, oversize brakes, 360-degree visibility, safety lock doors, padded visors and dashboards, and seat belts to use in emergency. Then they try to create an emergency by going the 100 mph. the salesman hinted the car will do.

Brains nurse, vaccinate, educate, fret, worry, hope and pray for the kids, then set poor examples which trap the tykes into trouble.

Brains buy only the best tools and equipment for around the house—then use makeshifts because it's too far to go to get the right tool for the job at hand.

Brains raise a fuss over the high cost of contributing to the church or welfare drives—then buy a new car which depreciates at the rate of three or four dollars per day.

Brains fret over the Congo situation but ignore the PTA situation.

Brains sit on a big fat chair all week—then make like marathon ditch-diggers on weekends.

Brains eat like horses—then put saccharin in their coffee.

Brains take a pep pill for breakfast, a sleeping pill after dinner, and Metrecal in between.

Brains complain about the government—then don't take time out to vote.

Brains take shortcuts—then have long stretches in bed.

Brains refuse to discipline the kids—then wonder why youngsters don't respect the law.

Brains buy the deadliest possible pesticides and herbicides—then spray half of it on themselves.

A brain is a sometimes brain is a sometimes foot.

ROBERT D. GIDEL

Eases Cylinder Handling

A three-wheeled cylinder carrying cart now provides safety and stability, where oxygen and acetylene bottles are handled.

Constructed of ¾ by 4-in. steel framing, tubing and sheet metal, the cart has features to minimize the possibility of strains in handling heavy bottles and protects them from blows or dropping.

For loading and unloading, the cylinder cradle unlocks and tilts, so cylinders may be placed on the horizontal platform. Once loaded, the cradle pivots forward and locks to the frame with a steel clevis pin.

Checking his "homework" with supervisor is Kenneth J. Williams, (right), safety official of a Welsh steel company. Giving a pointer is Charles Humphreys, the firm's safety director. Williams is one of 475 enrolled in the NSC's home study course.

Council Course Goes Abroad

The National Safety Council's home study course for foremen, started March 1, 1960, currently counts more than 475 students from the United States and Canada and several foreign countries.

One student sending completed examinations from farthest away is Kenneth J. Williams, a safety officer with the Steel Company of Wales, Ltd.

Mr. Williams is taking the course, "Supervising for Safety," as part of his training. He came to the firm's safety department after three years in the education and training section.

Born in Port Talbot, Wales, Mr. Williams, joined the Royal Navy when 16. For 10 years he saw service in waters around the world. He joined the Steel Company of Wales in 1953.

Although the home study course originally was designed to train supervisors in safety principles and techniques, the course is useful as a sound introduction for newcomers to the safety field.

Core of this correspondence training program is the *Supervisors Safety Manual,* prepared by engineers in the National Safety Council's Industrial Department. Also provided to the student are a guide with tips on use of materials and study hints, examinations, correspondence forms for questioning the instructor or to offer ideas, and pre-addressed envelopes.

The student studies at home, sending the examinations as he completes each chapter of the text. These tests, usually multiple choice or true-false quizzes, are corrected by a Council staff safety engineer and are returned to the student with comments.

On completion of the study course, the student receives a certificate indicating his achievement.

Length of the study program depends on the individual. He may complete the examinations as soon as he feels he has mastered the material in each chapter.

Currently 65 foremen have received their certificates of achievement.

Material covered in the text ranges from the philosophy of safety ("Safety and the Foreman," "The Human Element") to a variety of practical applications ("Personal Protective Equipment," "Guarding Machines and Equipment," "Fire Prevention and Control," and other subjects).

DuPont of Canada Spurs Fire Prevention

Demonstrations, quizzes, special motion pictures, and poster contests in local schools promoted fire prevention in DuPont of Canada plants several months ago.

At the Kingston (Ont.) Works, events spread over several weeks. Fire crews from the four shifts gave daily demonstrations of fire-fighting equipment and competed for a prize. A quiz—"Twenty Burning Questions"—was given to employees, and each worker received a booklet on fire safety in the home, along with a letter from the works management.

A continuous fire prevention program at Maitland (Ont.) Works reached its peak during the week. A fire prevention newspaper, pamphlets with fire safety suggestions, a letter from the works fire prevention committee and a quiz for the family on fire safety went to the homes of employees.

Plant vehicles carried fire prevention posters, and the plant displayed fire-fighting equipment. All mail was stamped with a fire safety slogan. A new color movie, *Our Obligation,* dealing with fire prevention in schools and sponsored by the works, was available for loan to interested community organizations.

Climax of the activities was a giant rally at which quiz winners received prizes and the crew topping the 1960 Works Fire Crew Competition won recognition.

A television fire-fighting demonstration, a city-wide school poster contest and distribution of wedge caps bearing a safety slogan were highlights of the program at the Shawinigan (Que.) Works. Demonstrations took place at the plant and at local schools and hospitals on the proper use of extinguishers.

Tours and displays of plant fire-fighting facilities enlightened district fire fighters, members of the city council and chamber of commerce and managers of other plants in the community.

The St. Clair River Works near Sarnia, Ont., offered demonstrations by the plant fire crew, four fire safety films and a quiz for employees on the same subject. All employees received training in use of fire extinguishers.

A NATIONAL SAFETY COUNCIL
TECHNICAL SERVICE

DATA SHEET 499

ARSENIC AND ITS INORGANIC COMPOUNDS

Copies of this data sheet will be available for order within 30 days

This data sheet is one of a series published by the National Safety Council, reflecting experience from many sources. Not every acceptable safety procedure in the field is necessarily included. This data sheet should not be confused with American Standard Safety codes, federal laws, insurance requirements, state laws, rules and regulations, or municipal ordinances.

Introduction

1. Arsenic in the form of arsenic trioxide has been known for centuries as an odorless and tasteless poison. Elemental arsenic is seldom responsible for fatal or disabling industrial poisoning. However, the effects of its fumes and dusts may be cumulative and continued exposure may cause severe symptoms. Arsine, a colorless gas formed when nascent hydrogen is generated in the presence of compounds containing arsenic, is extremely poisonous and can be fatal if inhaled in appreciable quantity.

Properties

2. Some of the physical and chemical properties of arsenic and of several of its compounds are given in the accompanying table.

Uses

3. Arsenic and its inorganic compounds fall into three major groups:

a. Elemental arsenic.
b. Arsenicals, which comprise white arsenic (As_2O_3), the arsenate salts, and the arsenite salts.
c. Gaseous arsenic or arsine (AsH_3).

4. Elemental arsenic is utilized in the production of various alloys. It increases the resistance of copper to corrosion, improves its machinability, and raises the annealing temperature.

5. Arsenic trioxide is used in the production of pesticides, such as lead arsenate, calcium arsenate, and copper acetoarsenite (Paris green), and in wood preservatives, such as Wolman salts, which contain 25 per cent sodium arsenate. It is also employed in the manufacture of pharmaceuticals, glass, cattle and sheep dips, hide preservatives, poisoned bait, and weed killers. Arsenicals have been used in the manufacture of dyestuffs, in the production of chemical warfare gases, and as debarking agents in the paper industry.

6. Arsine is employed in the synthesis of organic compounds.

Hazards

7. Occupational poisoning from pure metallic arsenic is rare. Arsenic trioxide taken internally is poisonous and can be fatal, but few cases of general poisoning have occurred from industrial exposure to this chemical. Dermatitis and perforation of the nasal septum are common problems associated with arsenic trioxide, either because of exposure to it as particulate matter borne in the air or because of direct contact with the compound in powder form.

8. Arsine gas constitutes a serious industrial hazard. In fact, the highest incidence of injury involving arsenic is caused by accidental poisoning from inhalation of arsine, which releases the hemoglobin from the red blood cells and can easily be fatal. Instances of chronic poisoning from arsine have also been recorded. Arsine may be formed when hydrogen is generated in the presence of a material containing arsenic. Consequently, concentrates, intermetallic compounds, and drosses containing arsenic should be handled with care.

9. In the smelting and refining industry, impurities in a molten metal (usually lead) are removed by the addition of aluminum. Arsenic is one of the more common impurities and, along with others such as antimony and sulfur, will combine with the aluminum and concentrate in the dross. Wetting this dross may cause one of several reactions or a combination of them. If nascent hydrogen is released, it could react with even minute amounts of arsenic to form arsine. If aluminum arsenide is formed in the dross, it could react with water to form arsine. These combinations

of events have resulted in a number of fatal arsine poisonings.

10. The recommended procedure for handling the dross is to convert it to a granular, dusty black form by the addition of sawdust. It is then roasted for at least one hour at 1,800 F, a procedure which effectively stabilizes it and will prevent liberation of arsine in the event of future wetting of the dross.

11. Certain important industrial metals such as zinc often contain enough arsenic to create a hazardous situation in the presence of an acid. Hydrogen may be produced by the reaction between the zinc and the acid and combine with the arsenic to form arsine. Only a trace of arsenic is required to create a problem. The metallurgical industry is particularly susceptible because acid treatment of arsenic-bearing metals is common.

12. At high temperatures, arsenic and its solid compounds become volatile and produce poisonous fumes. Even though these compounds are noncombustible, their volatility at higher temperatures makes the use of self-contained breathing apparatus mandatory for anyone fighting a fire where they are present.

Maximum Acceptable Concentrations

13. Arsine concentrations of 3 to 10 parts per million parts of air (ppm) may cause symptoms in several hours, 10 to 60 ppm may be dangerous in 30 to 60 minutes, and 250 ppm may be lethal in 30 minutes.

14. The maximum acceptable concentration* for arsine during an eight-hour period of exposure has been set at 0.05 part per million in air. The maximum acceptable concentration for arsenic during an eight-hour exposure has been set at 0.5 milligram per cubic meter of air. For calcium arsenate and lead arsenate, the recommended maximum acceptable concentrations for an eight-hour exposure are 0.1 and 0.15 milligram per cubic meter of air, respectively. These concentrations are accepted by the American Conference of Governmental Industrial Hygienists.

*Also known as the threshhold limit value and the maximum atmospheric concentration.

Containers and Shipping Regulations

15. Containers and shipping requirements for arsenic and its compounds are specified by Interstate Commerce Commission regulations.** All these compounds are Class B poisons and must carry the poison label. Each container should also carry a label or stencil identifying the contents.

16. Arsenic (metallic) may be shipped in 500-pound barrels or 100-pound casks.

17. Arsenic trichloride may be shipped in 20- or 55-gallon drums or in 5-gallon boxed glass carboys.

18. Arsenic trioxide may be shipped in 5- to 50-gallon drums or in tight wood (oak) barrels of no more than 700-pound gross capacity. Crepe-paper bag liners must be used unless the barrels are constructed with tongue and groove staves. This compound may also be shipped in hopper or bottom outlet cars provided that they are equipped with waterproof and dustproof covers. These cars should be used only for delivery to plants with private sidings.

19. Arsine is shipped in steel cylinders; copper arsenite in 1-pound bottles, wood kegs, or fiber drums. Lead arsenate in powder form is shipped in sacks and 100-pound barrels; in paste form, in cases, tins, 100-pound kegs, or 300- and 600-pound barrels.

20. Arsenic trisulfide is shipped in 50-pound multiwall paper bags. Copper acetoarsenite is shipped in 1-pound bottles, wood kegs, or fiber drums.

Storage

21. Arsenic and its compounds should be stored in areas removed from food or food products and from combustible materials. Those capable of sifting should be stored in containers of sift-proof construction. Hoppers and silos made of mild steel are acceptable.

22. Containers that have held arsenic or its compounds should not be cleaned with mineral acids because of the possibility of evolution of arsine.

**Agent H. A. Campbell's Tariff No. 10, Publishing Interstate Commerce Commission Regulations for Transportation of Explosives and Other Dangerous Articles by Land and Water in Rail Freight, Express and Baggage Services and by Motor Vehicle (Highway) and Water, including Specifications for Shipping Containers.*

Handling

23. Arsenic and its compounds require intelligent handling, and employees must be completely familiar with the potentially hazardous nature of such materials. Employee training must include thorough indoctrination in the use of personal protective equipment.

24. The possibility of the formation of arsine should be considered in processes and in areas where arsenic or its compounds are handled. Adequate general ventilation and local exhaust removal must be provided, unless the work is done in closed systems. Dust collectors should be used to prevent escape of injurious dusts to areas outside the plant.

25. Spills of arsenic trioxide or other powdered compounds of arsenic should be removed by a vacuum cleaner with a fabric filter, never by use of a broom. Personnel who empty the vacuum cleaner should be thoroughly trained in handling procedures.

26. General handling precautions that should be followed are:

a. Do not permit arsenic or its compounds to come in contact with the skin, eyes, nose, mouth, or clothing.
b. Do not eat or smoke in areas where contamination by arsenic or its compounds is possible.
c. Wash the hands and face before eating. Wash the hands before smoking. Make every effort to prevent ingestion of or contact with arsenic and its compounds.

Personal Protection

27. Every employee who handles arsenic or its compounds should put on clean work clothes daily, including cotton underwear and socks and a coverall. Dust-tight goggles should

SELECTED COMPOUNDS OF ARSENIC

Compound	Formula	Physical State	Color	Melting Point	Boiling Point	Specific Gravity	Solubility
Arsenic (metallic)	As	Brittle, crystal line metal	Silver gray-turns black in air	814 C (1,497 F) @ 36 atmospheres. Sublimes @ 615 C (1,139 F). Appreciably volatile @ 100 C (212 F).	. . .	5.6 to 5.9	Soluble in nitric acid; insoluble in water.
Arsenic trichloride Also known as: Arsenic chloride, Arsenious chloride, Arsenous chloride, Butter of arsenic, Caustic arsenic chloride, Fuming liquid arsenic	$AsCl_3$	Oily liquid	Colorless or pale yellow	−18 C (−0.4 F)	130.5 C (267 F)	2.163	Soluble in concentrated HCl and most organic liquids; decomposed by H_2O; fumes in moist air.
Arsenic trioxide Also known as: Arsenious acid, White arsenic, Arsenious oxide, Arsenious arsenic oxide, Arsenous anhyldride	As_2O_3	Amorphous powder or Vitreous Lumps	White	Sublimes @ 193 C (379 F) Melts 315 C (599 F)	. . .	3.738	Soluble in glycerine, acids, and alkalies; slightly soluble in H_2O.
Arsenic trisulfide Also known as: Arsenious sulfide, Arsenous sulfide, Arsenic tersulfide	As_2S_3	Crystals or powder	Yellow; changes to red @ 170 C (338 F)	300 C (572 F)	707 C (1304 F)	3.43	Soluble in HNO_3 and alkaline solutions; insoluble in H_2O and HCl.
Arsenic pentoxide Also known as: Arsenic anhydride	As_2O_5	Amorphous powder	White	Decomposes @ 315 C (599 F)	. . .	4.086	Soluble in water, alkalies and ethyl alcohol.
Arsine Also known as: Arsenic hydride, Arseniuretted hydrogen	AsH_3	Gas	None	−113.5 C (−172 F)	−55 C (−67 F)	2.695*	Soluble in H_2O; slightly soluble in alcohol and alkalies.
Calcium Arsenate	$Ca_3(AsO_4)_2$	Amorphous powder	White	. . .	. . .	. . .	Slightly soluble in cold water; insoluble in hot water; soluble in dilute acids.
Copper arsenite Also known as: Cupric arsenite, Copper ortho-arsenite, Sheele's green	$CuHAsO_3$ or $Cu_3(AsO_3)_2 \cdot 3H_2O$	Fine powder	Light green	Decomposes	. . .	. . .	Soluble in acids; insoluble in H_2O and alcohol.
Lead arsenate	$Pb_3(AsO_4)_2$	Crystalline	White	1,042 C (1,908 F)**	. .	7.30	Soluble in HNO_3; insoluble in H_2O.
Potassium arsenate (monobasic)	KH_2AsO_4	Crystals	Colorless or white	288 C (550 F)	. . .	2.867	Soluble in water; insoluble in alcohol.
Copper acetoarsenite $(CuOAs_2O_3)_3 \cdot Cu(C_2H_3O_2)_2$ Also known as: Cupric acetoarsenite, Paris green, Schweinfurth green, Imperial green, King's green, Emerald green, New green, Pat green, Moss green, Mitis green, Vienna green, Parrot green		Powder	Emerald green	. . .	. . .	. . .	Soluble in acids; insoluble in alcohol and water.

* Specific gravity with reference to air = 1

** Slightly decomposes at 1,000 C (1,842 F)

be used if dust concentrations are high.

28. At the end of each workday, the employee should thoroughly clean his work shoes, take a shower, and make a complete change of clothing. Work clothes should be laundered before they are worn again.

29. Calamine lotion and zinc oxide powder can be used on the hands and other skin areas before work. If gloves of rubber or other protective material are worn, they must be cleaned inside and out after each use.

30. Local exhaust should be adequate to remove dust or arsine. Dust respirators approved by the Bureau of Mines should be available for use in case the local exhaust system should break down or if dust concentrations should be high. If the presence of arsine is suspected, complete respiratory protection approved by the Bureau of Mines for the specific hazard is required.

31. Safety showers and eyewash fountains should be available, and they should be checked frequently to see that they do not become contaminated.

Symptoms of Poisoning

32. Employees should be familiar with the symptoms of poisoning and should immediately report to the medical department if these symptoms occur.

33. Symptoms of poisoning by arsine are severe nausea, severe headache, abdominal pain (usually cramps), and numbness and tingling of hands, feet, and face. These are symptoms of red blood cell destruction and usually appear soon after exposure. One of the first signs may be the passing of bloody urine.

34. Some literature on the subject states that arsine can be recognized by its garlic-like odor. However, a number of victims have stated that they smelled nothing unusual at the time of exposure. Those receiving less than the lethal dose usually recover without serious aftereffects although permanent injury may occur if exposure has been chronic.

35. Arsenic trioxide, if swallowed in even very small amounts (1 or 2 grains), can cause acute poisoning. Symptoms are severe abdominal pain, difficulty in swallowing, tight feeling in the throat, vomiting, inability to urinate, cold and damp skin, rapid weak pulse, shallow breathing, and sometimes convulsions.

36. The symptoms of chronic poisoning by arsenic or arsenic compound dusts show themselves on the skin, on the mucous membranes of the eyes, and upper air passages, in the gastrointestinal tract, and in the nervous system. Often symptoms such as weakness, loss of appetite, and occasional nausea develop slowly, with the eyes, skin, and respiratory system being affected later.

37. Dusts on the skin, especially where there are folds, as around the mouth, or where the surfaces are moist, as in the armpits, set up an eruption or eczematous condition which, if not treated, will lead to extensive ulceration. Inhalation of excessive amounts of dust will lead to perforation of the nasal septum.

38. Symptoms of poisoning from arsenic trichloride may be intense irritation, itching, or ulceration of the skin and mucous membranes, multiple neuritis (inflamation of the spinal nerves) with sensory and motor disturbances, loss of hair, sweating of palms and soles.

39. Symptoms of poisoning from copper arsenite and copper acetoarsenite are similar to those from arsenic poisoning. Lead arsenate has a "double-barreled" effect because both the lead and the arsenic molecules are highly poisonous (although, individually, arsenic is a more powerful poison than lead). Symptoms of chronic poisoning from lead arsenate are similar to those caused by lead; they include loss of appetite, metallic taste, constipation, severe abdominal cramps, facial pallor, mild jaundice, and anemia.

First Aid

40. First-aid treatment is usually not needed when dust is inhaled or comes in contact with the skin, although the employee should report the exposure to the medical department.

41. If arsenic or one of its compounds has been swallowed, vomiting should be induced as soon as possible. The victim should be given a glassful of warm water in which a tablespoon of common salt has been dissolved. This remedy should be repeated until the vomited fluid is clear. If necessary, the victim should stick his finger down his throat to induce vomiting.

42. After the vomited fluid is clear, the individual should be given 2 tablespoonfuls of Epsom salt or milk of magnesia in water and all the water he wants to drink. He should lie down and keep warm while awaiting medical assistance.

43. For a case of acute arsine poisoning, there is no specific first-aid measure other than immediate removal of the victim from the exposure. Medical attention should be secured promptly. A worker exposed to appreciable concentrations of arsine should be hospitalized at once.

Medical Examinations

44. Workers who handle arsenic or its compounds should be given thorough preplacement physical examinations and annual examinations thereafter.

45. People subject to chronic or recurrent skin conditions or to intestinal or nervous disorders should not be assigned to jobs in which they may be exposed to arsenic or its compounds. Since these conditions are also symptoms of arsenic poisoning, diagnostic difficulties could be encountered with such people if they were working with the substances.

Waste Disposal

46. Waste materials containing arsenic or its compounds should be buried in an isolated area. This should be a fenced and restricted area in which no trespassing or animal grazing is allowed. The site selected should be so located that there will be no possibility of arsenic leaching out or being carried by surface drainage to streams,

ponds, or private or public water supplies.

47. Combustible containers that have been used for arsenic or its compounds should be burned in small quantities when there is enough wind to disperse fumes. The area downwind from the burning site should be unoccupied for a distance that will allow complete dilution of fumes that may be generated.

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ACKNOWLEDGMENT

This data sheet, a revision of former Data Sheet 297, was prepared by the staff of the Industrial Department, National Safety Council. It has been extensively reviewed by members of the National Safety Council and by representatives of chapters of the American Society of Safety Engineers. It has been approved for publication by the Publications Committee of the Industrial Conference of the Council.

Hard Hatted Project

Personal protective gear is contributing to progress on the $720 million Niagara power project.

Built by the Power Authority of the State of New York, the project includes five major features: intake structures, water conduits, Niagara generating plant, reservoir and reservoir pump-generating plant.

When complete next month, the development will provide 2,190,000 kilowatts of electric power, more than generated at Grand Coulee Dam and enough to supply the household needs of Chicago.

Incidental development includes the Niagara Parkway and expressway, a new bridge to Goat Island, a new international bridge to Canada, railroad grade crossing elimination, and improvements at Prospect Park and Goat Island.

Playing an important role in protecting the thousands of workers on the site is a project-wide safety hat program. In one example of the effectiveness of head protected activites, a rock loosened by excavation fell on a worker at the intake site, striking his headgear. Injury was limited to severe scalp contusion.

Equipped with mandatory head protection, engineers check activity at the Niagara generating plant from the Canadian side of the river. Completion is expected early in 1961. (Photo courtesy Mine Safety Appliance Co.)

PERSONALS

ROBERT P. GLEASON is now safety engineer in the health physics and safety component of the General Electric-operated Knolls Atomic Power Laboratory in Schenectady, N.Y.

Gleason was chief safety engineer and industrial hygienist for the Sylvania Electric Corp. Earlier he worked for the Fidelity & Casualty Co. of New York as an industrial hygienist; for the General Electric Plastics Div., Pittsfield, Mass., as a chemist; and for the Commonwealth of Massachusetts as an industrial hygiene chemist.

Graduated from the University of Massachusetts with a B.S. degree in chemistry in 1938, he received an M.S. degree in chemistry in 1942.

Gleason is a member of the American Chemical Society, the American Industrial Hygiene Association, the American Society of Safety Engineers, and the American Public Health Association.

Robert P. Gleason

RAY E. BEALS of Haddonfield, N.J., is the new assistant safety director at Schmidt's of Philadelphia.

Beals succeeds William T. Leonard, former assistant safety director, who has been promoted to administrative duties in the main office.

A resident of Collingswood, N.J., Beals joined Schmidt from the Merlin Motor Company, Camden, where he served as Tire Department manager and liaison man in the sales office.

Thomas H. Bullard

THOMAS H. BULLARD has been appointed chairman of the Industrial Safety Committee for the current program year. Harry H. Verdier, executive director of the Safety Council, Chamber of Commerce of Greater Philadelphia, made the announcement. Bullard is also serving on the council's board of directors, and was recently elected vice chairman, Power Press & Forging Section, executive committee, NSC.

Bullard is safety manager-company-wide for The Budd Company, responsible for employee safety in both the Hunting Park and Red Lion plants in Philadelphia, as well as plants in Gary, Ind., and Detroit.

Bullard is past-president, Philadelphia chapter, American Society of Safety Engineers and is now serving on the Industrial Conference, NSC.

Ray E. Beals

LAWRENCE A. CARVEY of Glendale, N. Y., has been appointed staff engineer—safety standards—of the American Standards Association.

Mr. Carvey formerly worked with Continental Casualty Company and later with General Fire & Casualty Company, where he was in charge of safety engineering and applied accident prevention.

Born in Brooklyn, N. Y., Mr. Carvey attended Cooper Union School of Engineering and the New York University Center for Safety Education. He is a member of the National Safety Council, Veterans of Safety, and is recent past-president of Safety Center Alumni of N.Y.U.

Lawrence A. Carvey

ROBERT C. THORBURN has been named manager of a newly-formed nuclear safety sub-section at General Electric's Vallecitos Atomic Laboratory.

Thorburn's duties will include responsibility for nuclear safety of the entire atomic power equipment department, for AEC licensing procedures, and for reactor technical operations and reactor operations physics functions.

Thorburn was formerly manager —health and safety, in APED's employee and community relations section. He joined the company in 1946 with the Hanford Atomic Products Operation in Richland, Wash., where he was employed in the radiological science department.

He is a graduate of the University of Chicago.

Stuart K. Hopkins

New member of the NATIONAL SAFETY NEWS staff is STUART K. HOPKINS, assistant editor.

Hopkins came to NSNEWS after a year's study in France, prior to which he edited the *Basec Mission*, army newspaper for troops in western France.

Before entering the army in 1957, he worked for newspapers in Des Moines, Iowa, and Chicago. He was graduated from the State University of Iowa in 1956 after majoring in magazine journalism.

FRED LUBET has succeeded Robert O. Jones as advertising and exhibit manager for the National Safety Council.

Jones is now midwestern sales representative for the Wilson Rubber Co., Canton, Ohio.

Lubet was graduated *cum laude* from the University of Pittsburgh in 1948, having studied journalism and economics.

He then became editor of adult education, vocational and child guidance publications for Science Research Associates.

Lubet came to the Council in 1951 as an editor in the Industrial Department, and as staff representative for the Printing and Publishing Section. In 1954 he became director of NSC's Membership Extension Division. Since January 1958 he has been assistant manager of the Membership and Sales Department.

OBITUARIES

HENRY B. DUFFUS

HENRY B. DUFFUS, accident prevention administrator for Westinghouse Electric Corp., died November 23 in Wilkinsburg, Pa., after a short illness. He was 63.

Mr. Duffus was responsible for coordination of safety policies and procedures in the company's United States plants, and was an active worker in safety organizations.

Henry B. Duffus

He served on the National Safety Council's Board of Directors, was vice chairman of sections in the Council's Industrial Conference, a member of the Industrial Conference Executive Committee, and a member of the Congress Program Study Committee.

A past president of the American Society of Safety Engineers, he worked on various ASSE committees. Active also in the American Standards Association, Mr. Duffus had been a member of the Safety Standards Board and several committees.

Representing industry, he was a member of the business advisory council of the U.S. Bureau of Labor Statistics. Mr. Duffus also served as a director of the Western Pennsylvania Safety Council.

He was graduated from the Bliss Electrical School in 1923 and joined Westinghouse the same year.

WILLIAM O. WILSON

WILLIAM O. WILSON, for 15 years manager of safety for Standard Oil Co. (Ind.), died December 3, in Chicago. He was 63.

Mr. Wilson had been active in the work of the National Safety Council, acting as chairman of the Industrial Conference and vice president for industry.

He was a member of the American Society of Safety Engineers, the National Fire Protection Association, the Society of Fire Protection Engineers, and had participated in activities of the American Petroleum Institute.

Joining Standard Oil in 1925, he entered safety work in 1927 at the Milwaukee, Wis., sales division. He became manager of safety for the company in 1945.

William O. Wilson

A career of 30 years with the Army Corps of Engineers ended November 1 with the retirement of ELMER C. HENSCHEN, chief of the Safety Branch of the U. S. Army Engineer District, Chicago.

THOMAS A. MARSHALL, JR., has been elected executive secretary of the American Society for Testing Materials by its board of directors. Previously he was senior assistant secretary of the ASME.

International Center Celebrates First Year as Safety Clearing House

THIS MONTH marks the first birthday of the International Occupational Safety and Health Information Centre, Geneva, Switzerland. The CIS (Centre Internationale de Securité) is a clearing house specializing in data on safety literature and legislation.

Since January 1960 CIS has had on hand in systematic form various abstracts of current publications, reports, and legislation concerning occupational safety and health.

This agency is the product of joint planning and negotiations by national organizations since 1958, under direction of the International Labour Office and the International Social Security Association. Formerly, it had been difficult to determine or obtain material in print or available throughout the world on industrial safety subjects.

CIS offers to subscribers (in standard international library format on 3- by 5-in. cards): bibliographical references, a summary in English of the text, the name of the national center supplying information, and a CIS classification code number for reference.

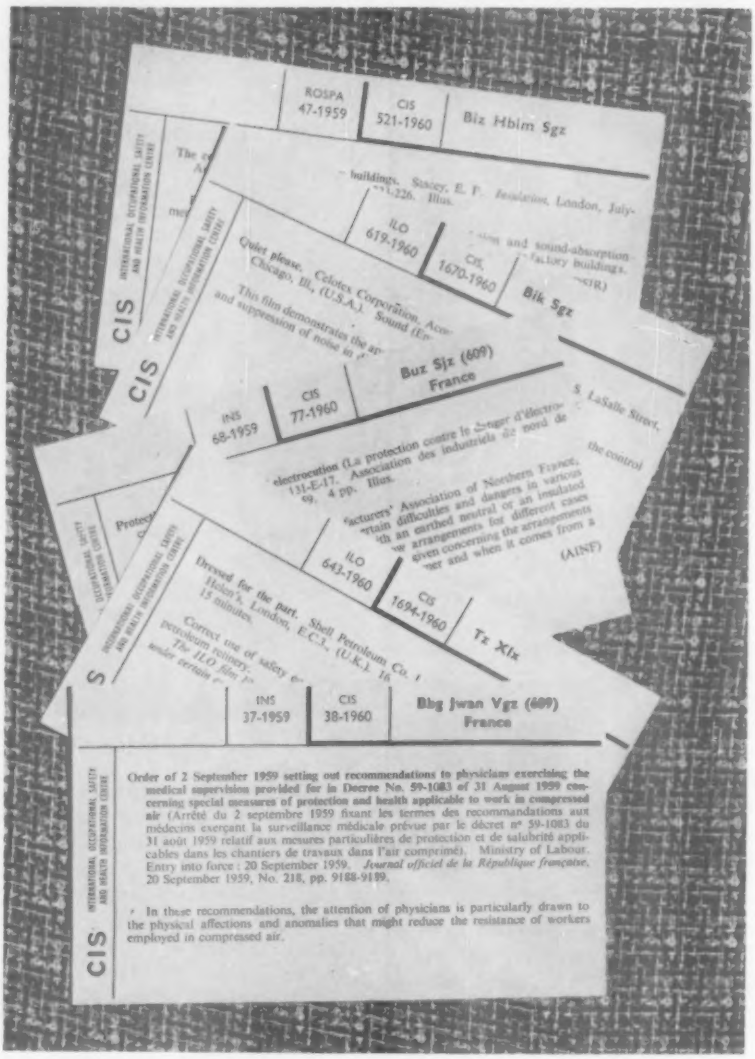
Abstracts include material on dangerous substances; radiation protection; electrical safety; noise problems; dust; machinery and plant; fire and explosion hazards; personal protective equipment; occupational diseases; industrial physiology and psychology; and safety and health organization, training, and education.

Printed cards go to 4,000 to 5,000 subscribers a year at three- to four-week intervals. An alphabetical index of subjects and cross references, covering cards issued, is sent to subscribers regularly.

Only complete sets of cards are available. The close relationship of subjects and costs of sorting to meet individual requests make it impossible at present for CIS to accept partial subscriptions.

Originals or copies of publications cataloged are at CIS headquarters. Subscribers can purchase photocopies and microfilms of texts they can't obtain directly from publishers.

Color-coded cards locate the main types of material on hand. Green cards carry abstracts of laws and regulations touching on safety. Pink cards indicate nonstatutory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CIS 521-1960
Biz Hblm Sgz
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CIS 1694-1960
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CIS
Order of 2 September 1959 setting out recommendations to physicians exercising the medical supervision provided for in Decree No. 59-1083 of 31 August 1959 concerning special measures of protection and health applicable to work in compressed air (Arrêté du 2 septembre 1959 fixant les termes des recommandations aux médecins exerçant la surveillance médicale prévue par le décret n° 59-1083 du 31 août 1959 relatif aux mesures particulières de protection et de salubrité applicables dans les chantiers de travaux dans l'air comprimé). Ministry of Labour. Entry into force : 20 September 1959. Journal officiel de la République française, 20 September 1959, No. 218, pp. 9188-9189.
In these recommendations, the attention of physicians is particularly drawn to the physical affections and anomalies that might reduce the resistance of workers employed in compressed air.

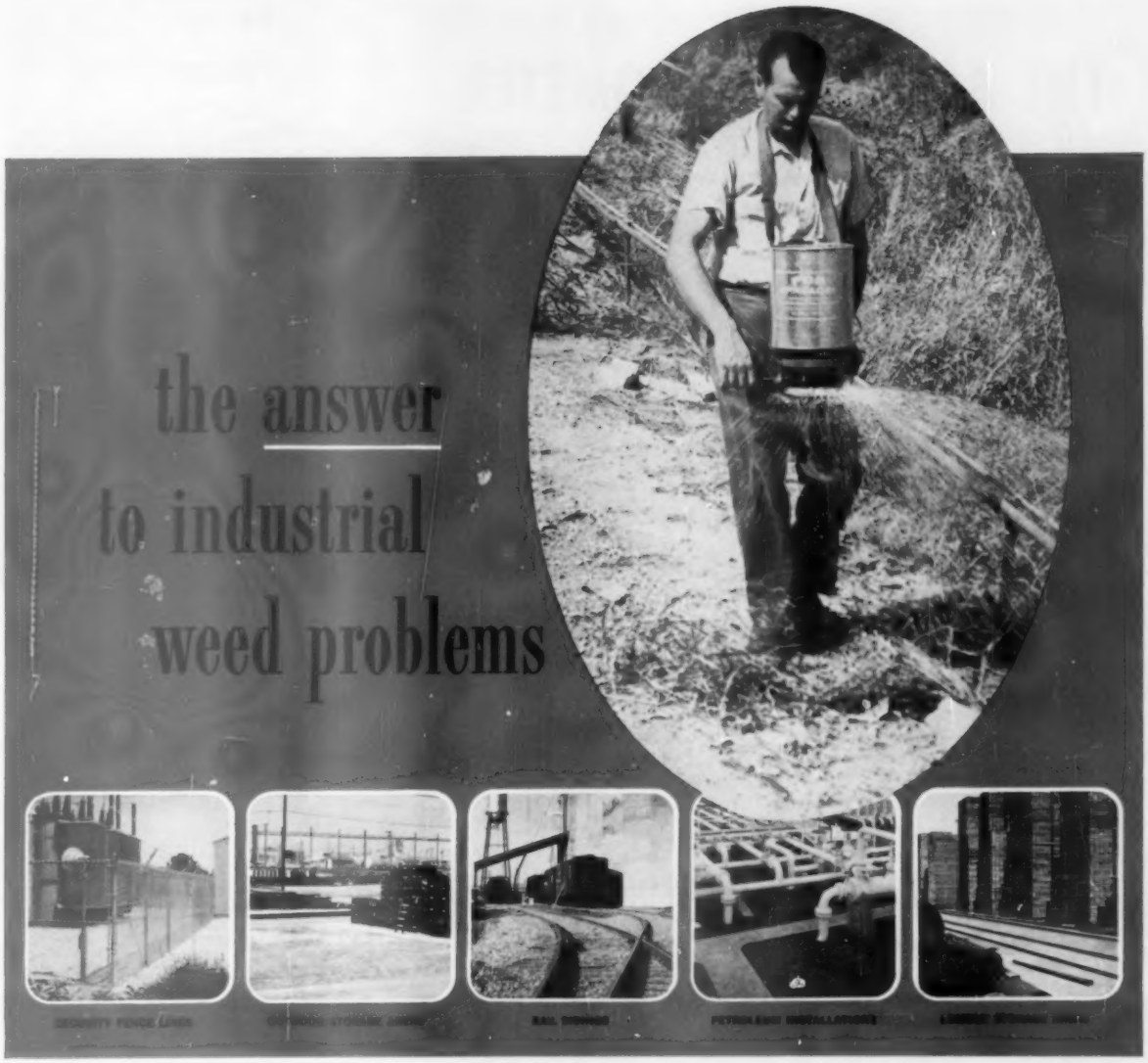
CIS cards are standard library format, carry special code for ordering material.

regulations, standards, directives, and data sheets. White cards contain abstracts and references to books, pamphlets, periodicals, research reports, proceedings of congresses and meetings, statistics, patents, and annual reports.

Agencies assisting this project in the United States are the U.S. Public Health Service, and the Bureau of Labor Standards of the Department of Labor. The Council cooperates with CIS by forwarding to it a copy of appropriate materials published by the Council. NSC staffers provide abstracts made of other materials available on safety.

National agencies from 22 other nations are cooperating with CIS and provide information on safety literature and legislation of their countries. These include England, France, Germany, Italy, Austria, Belgium, Denmark, Holland, Norway, Sweden, and Switzerland.

Meanwhile, CIS will analyze materials from nations not represented in its membership. Contact the CIS branch in the United States through the International Labour Office, 917 15th St., N.W., Washington 5, D.C., for further information.



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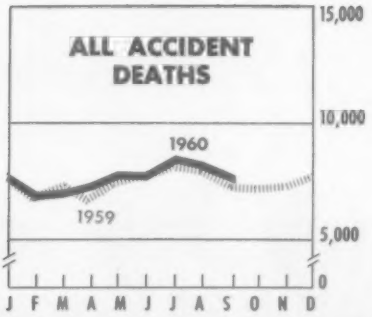
THE ACCIDENT BAROMETER

Prepared by the Statistics Division
National Safety Council



THE NATIONAL ACCIDENT FATALITY TOLL

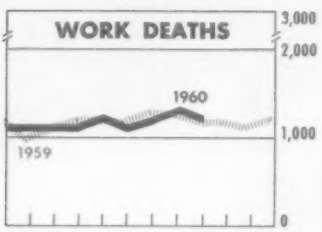
	September			Nine Months		
	1960	1959	Change	1960	1959	Change
Total	7,650	7,500	+ 2%	68,500	67,900	+1%
Motor-Vehicle	3,430	3,360	+ 2%	27,440	27,220	+1%
Public (except M.V.)	1,400	1,350	+ 4%	13,100	13,200	−1%
Home	1,900	1,900	0%	19,800	19,400	+2%
Work	1,200	1,150	+ 4%	10,500	10,400	+1%

WORK INJURIES

21 NATIONAL SAFETY COUNCIL CONTESTS

Disability Injury Frequency Rates

	1960	1959	Change
September	6.51	6.85	−5%
Nine Months	6.27	6.47	−3%

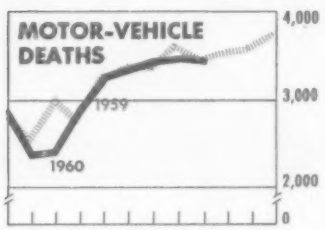


MOTOR-VEHICLE DEATHS

NINE MONTHS 1960

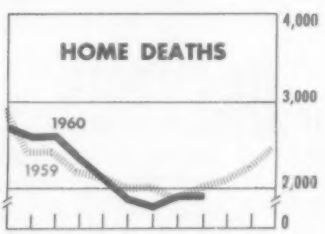
CHANGES IN DEATHS

Number of Reporting States		Number of Reporting Cities Over 10,000 Pop.
25	UP from 1959	305
0	SAME as 1959	161
23	DOWN from 1959	254



GREATEST PER CENT REDUCTION IN DEATHS

States		Cities Over 200,000 Pop.	
Rhode Island	−32%	Grand Rapids, Mich.	−46%
New Hampshire	−32%	Oakland, Calif.	−41%
Nebraska	−21%	Worcester, Mass.	−41%



HOME AND PUBLIC DEATHS

NINE MONTHS 1960

HOME DEATHS

UP from 1959:
- Firearms
- Fires, burns
- Poisoning

DOWN from 1959:
- Suffocation
- Poison gas
- Falls

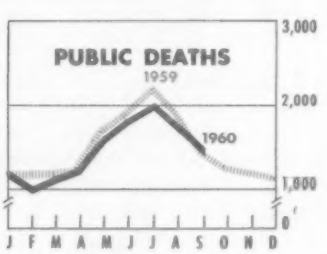
AGE GROUPS
Change from 1959

Home		Public
Up	0- 4	Down
Down	5-14	Up
Down	15-24	Down
Up	25-44	Down
Up	45-64	Up
Up	65 & Over	Down

PUBLIC DEATHS

UP from 1959:
- Drownings
- Fires, burns

DOWN from 1959:
- Falls
- Transportation
- Firearms



"Hey, Dad . . . It's the Newest Thing Since ME!"

U. S. SAFETY'S 3-D All-New Line

design! New 3-D spatula-type temples provide the utmost comfort. Over 2 square inches of inside temple surface offer better compression and maintains proper adjustment at all times. New Lok-Tite sealed temple screws never back out in use yet are easily removed and replaced without special tools. Standard 5 barrel hinges allow interchange of frames and temples.

desirability! New two-tone design available in all the "most wanted" colors in either keyhole or saddle bridge. Smooth, high-lustre finish along with the new high fashion temple shape adds the ultimate in cosmetic appeal. Far greater employee acceptance is inevitable with the 3-D line.

durability! Wire cores in the temples join "steel to steel" with the hinge rivets for super strength. A 40% higher inside safety flange on lens channel eliminates lens "knock through" from impact. All U.S. Safety products meet the American Standard Safety Code as approved by A.S.A. Money can not buy finer quality!

TRADE IN YOUR OUTDATED OLD SPATULA TEMPLES! ASK ABOUT THE NEW 3-D EXCHANGE PLAN!

U.S. SAFETY

PROTECTS THE EYES OF INDUSTRY

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OFFICES IN PRINCIPAL INDUSTRIAL CITIES
IN CANADA: PARMELEE, LTD. IN ENGLAND: PARMELEE, G. B.

a new dimension in eye protection

AROUND THE COMPASS

ACTIVITIES

• PROGRAMS

• EVENTS

Off-the-Job Accident Summaries

Russ Hicks, manager of the Hamilton (Ohio) Safety Council, recently submitted a report on that council's off-the-job activities.

A system has been established by the council for off-the-job and on-the-job accident comparison. A monthly off-the-job accident summary was initiated in January 1959.

Information for each monthly report is obtained from the experience of the various companies in the area submitting individual reports on their off-the-job accidents for the period involved. More than 50 companies are now reporting. At least 15,000 employees are covered by these reports with a total of 2½-million hours work and 4½-million hours of off-the-job exposure.

Each month the job frequency rate is compared to the off-the-job frequency rate for the same period. In all cases the off-the-job rate is higher, sometimes by more than two to one.

Accidents are broken down into home, traffic and public. Special divisions are listed under each of these, such as stair falls, power mower, playing baseball, two-car collisions, and others.

Occasionally, a monthly report will call attention to a particular type of accident which has occurred frequently in previous months.

The report suggests this particular hazard be brought to the attention of company employees.

The off-the-job summary is sent out each month along with the current monthly report of accidents in the council's industrial safety contest. It tells a brief but important story of frequency and circumstances of accidents that occur while the employee is away from the plant.

New York Prepares Off-the-Job Program

The Citizen's Council for Traffic Safety of New York has prepared a one-year program on off-the-job traffic safety which will be recommended to New York businesses. A kit of work material includes 10 NSC *Fact Sheets* and two booklets for monthly distribution to all employees. The New York Telephone Company has started this program, with distribution to its 75,000 workers.

Shooting Safety Chairman Appointed

Louis F. Lucas, executive director of the National Rifle Association of America, has been appointed chairman of the NSC Recreational Shooting Safety Committee by the chairman of the board of directors.

Governor Commends Safety Manager

Governor Harold W. Handley of Indiana recently presented a certificate of commendation to Ivan A. Martin, manager of the Fort Wayne Safety Council, in recognition of "outstanding public service in support of Indiana's traffic program."

Fifth Year for Radio Safety Series

"You Are the Jury," weekly radio series of the Highway Traffic Safety Center of Michigan State University, began its fifth year of service to traffic safety education in November.

"The Case of the Fallen Hero," broadcast the week of November 13, was the 209th consecutive program in the series. Eddie Bracken, stage, screen and TV star, played the dramatic lead in this program.

Produced by the Center and the University's Radio Station WKAR, the 15-min. program is provided to Michigan radio stations at no cost. During the past four years, more than 40 Michigan stations have carried it regularly.

The program has been the recipient of several awards, including the NSC Public Interest Award, the Alfred P. Sloan Radio Award and the George Foster Peabody Award.

Civic Club Backing Promoted by Safety Group

The board of directors of the Springfield-Greene County (Mo.) Safety Council played host at breakfast recently to representatives of local leading civic organizations.

The president of the council asked participants to help interest their groups in the activities of the council, and suggested each civic club organize a safety committee to provide a nucleus in every organization.

Pictorial Representation Of "Everywhere" Theme

The Twin Cities Area Safety Council, St. Joseph, Mich., has developed an effective pictorial representation of the "SAFETY EVERYWHERE . . . all the time!" theme.

The picture contains an outline map of the United States to get across the "everywhere" aspect. The "all the time" segment is highlighted by the hands of a clock superimposed on the map, the minute hand pointing to the theme "SAFETY EVERYWHERE . . . all the time!" and the hour hand pointing to St. Joseph, Mich.

These gloves now give 20% longer protection

*Extra*coat, the controlled application of thicker coating on the palms of Edmont industrial gloves, now provides 20% longer protection against cuts, abrasion, solvents and other chemicals. This 20% "bonus" further increases the 40% to 70% cost savings which are typical where Edmont *job-fitted* gloves replace older types. For example:

CASE NO. 697: Operating a metal shear, flexible Snorkel gloves, *Extra*coated with specially textured vinyl, gave 33⅓% longer protection than leather palm gloves previously used and reduced glove costs 52%.

CASE NO. 673: Handling caustic soda, Neox gauntlets, *Extra*coated with reinforced neoprene, protected 4 times longer than rubber gloves previously used and reduced glove costs 83%.

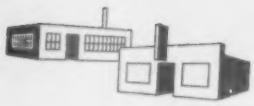
CASE NO. 671: Handling steel for truck bodies, Grab-it gloves, *Extra*coated with cut-resistant rubber, outwore expensive leather gloves 25 shifts to 20, gave positive non-slip grip and reduced glove costs from 8¢ per man-shift to 3.8¢.

FREE TEST OFFER TO LISTED FIRMS: We make more than 50 types of *Extra*-coated and impregnated fabric gloves. Tell us your operation. Without cost, we will recommend correct gloves and supply samples for on-the-job comparison test. Write Edmont Inc., 1205 Walnut Street, Coshocton, Ohio. In Canada, write Edmont Canada Ltd., Cowansville, Quebec.

Edmont

JOB-FITTED GLOVES

Circle Item No. 9—Reader Service Card



SMALL BUSINESS and ASSOCIATIONS

By RAYMOND C. ELLIS JR., and JOHN T. CURRY

Small Business Program Staff, National Safety Council

1961 Association Award Competition

An increasing number of associations are including safety as an effective service to their member companies. For several years the Council has recognized the excellence of association safety programs through an Association Safety Award.

The award is available to members or non-members of the Council's Associations Division. Professional safety societies are disqualified from participation in the contest, as are community service groups that may have undertaken a specific safety project measured in terms of accident frequency reduction in a given industry or in a cross-section of a community's industries.

A total of 25 per cent of the scoring relates to accident experience of association members, with 15 per cent reflecting a disabling frequency rate reduction in the past five years compared to other entries—providing it is greater than a 10 per cent reduction in the contest year being reported.

The remaining 10 per cent indicates a frequency rate reduction in the past five years greater than the average reduction for all industry.

The remaining 75 per cent is awarded for safety activities of the association. These may include:

1. Safety organization—staff safety personnel, association safety committees, and promoting safety among members . . . 15 per cent.

2. Service to members—safety contests, surveys, statistics analyses, safety training courses, research on accident causes, accident costs, guarding problems, library . . . 15 per cent.

3. Safety publications for members—manuals, booklets, posters, news ing problems, library . . . 15 per cent.

4. Publicity—articles or advertisements in association magazines or industrial journals, promotion of off-the-job safety, safety talks or exhibits at association meetings and conventions . . . 15 per cent.

5. Cooperation with other agencies —reporting of accident data, statistical surveys, technical data to the National Safety Council, helping other associations start safety programs or giving technical aid . . . 15 per cent.

A mailing has been made to the associations with further information on the contest and the invitation to submit the material no later than March 1, 1961. This will permit NSC to process entries and to have the committee of judges take action so award recipients might be notified by April 15, 1961. This will permit award of the plaque to organizations holding annual meetings in late April, May and June.

If you, as an association executive or a safety representative of an association's member company, would like further data on the award, contact the staff of the NSC Small Business and Associations Division.

NSC Recognized By Awards

1960 was a significant year in the relationship of the National Safety Council to the safety efforts of two national associations. Receipt of a National Restaurant Association plaque, recognizing the Council's contribution to the food services industry has been reported previously.

For the third year the Council served on the program of the annual meeting of the Contracting Plasterers' and Lathers' International Association at Philadelphia, Pa. During those sessions, the CPLIA presented an Industry Award to the Council in appreciation for services to the lathing and plastering industry.

Reproduced here at the left is the CPLIA's token of appreciation to the National Safety Council.

Circle Item No. 10—Reader Service Card —>

257 of the 500 largest U.S. corporations rely on ANSUL for basic fire protection. Thousands of other companies, large and small, have found the right answers to their fire protection problems in Ansul's complete line of fire extinguishing equipment.*

*We'll be happy to send you our latest catalog describing in detail Ansul's line of hand portable dry chemical, carbon dioxide and water extinguishers, wheeled, stationary, mobile units and automatic systems.

Your local Ansul Man is a trained fire protection expert, available to survey your plant and counsel on your fire protection requirements. Call him for an appointment (he's listed in the "Yellow Pages") or write ANSUL CHEMICAL COMPANY, Marinette, Wisconsin.

ANSUL

Fire Equipment
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Honored for Advice In Federal Safety

Three non-governmental officials have received the Secretary of Labor's Award of Merit, granted for outstanding advisory service to the Department on job safety.

Presented by Under Secretary of Labor James T. O'Connell at a meeting of the Advisory Committee of President's Conference on Occupational Safety, awards went to Vincent P. Ahearn, managing director, National Sand and Gravel Association; Cyril Ainsworth, deputy managing director, American Standards Association, Inc.; and Reed O. Hunt, president of Crown Zellerbach Corporation.

Mr. Ahearn was honored for service as executive director of the President's Conference on Occupational Safety. He remains as a member of the Conference Technical Advisory Committee.

Mr. Ainsworth has served on safety advisory committees for more than 20 years. His efforts, along with the services of the association he represents, are credited with the initiation of 150 voluntary safety codes.

In planning and directing the 1960 sessions of the President's Conference on Occupational Safety, Mr. Hunt succeeded in bringing together 3000 leaders of safety, business, labor, and government.

Under Secretary of Labor James T. O'Connell presents Secretary's Award of Merit to three non-government officials for advisory roles in government safety work. Left to right: Vincent P. Ahearn, managing director, National Sand and Gravel Association; Adm. George F. Hussey (who received the award on behalf of Cyril Ainsworth, deputy managing director, American Standards Association); Mr. O'Connell; and Reed O. Hunt, president, Crown-Zellerbach Corporation.

NOTICE

Under the trade-mark laws of the United States and the provisions of its Congressional Charter the National Safety Council has obtained trade-mark registration and legal protection for its emblems, including the Green Cross for Safety emblem, and the Universal Safety emblem, as shown below:

Pursuant to its legal rights, and in order to carry out its obligation to the public, the National Safety Council has adopted a policy that these trade-marked emblems may not be used, under any circumstances, without its approval and authorization. The policy, adopted by the Board of Directors of the Council, is available on request.

Manikins Conduct Safety Fashion Show

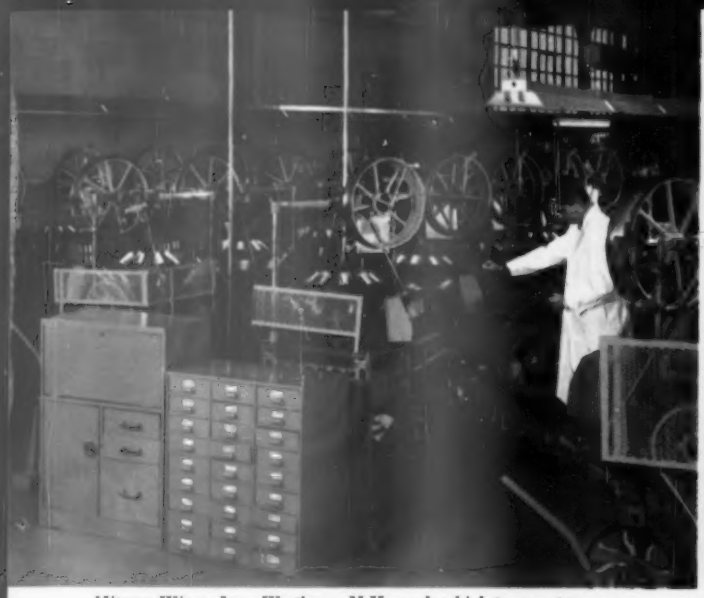
These dummies are dressed the smart way. Manikins were provided by local merchants who got a little discreet advertising in return for the loan of the window display models.

Two display window manikins conducted a safety fashion show for Continental Can Company's Plant No. 22 in Three Rivers, Mich. This exhibit greeted 750 workers on their return from vacation and, tied in with a campaign for safety clothing, did a real job, according to Bob Tannehill, training supervisor for Continental.

Between the manikins a placard read: "Are You 'Safety-Dressed' for the Job? Here's What Safety Experts Say You Should Wear While on the Job." Letters on the dummies were keyed to explanatory sheets nearby, one for men's apparel and one for womens' wear. Items referred to included hairnets, safety shoes, slacks for women, short sleeves or sleeves tightly buttoned at the waist, and other garb. Local merchants provided the manikins and indicated by sign where safety clothing could be purchased.

In safety talks and committee work during the campaign, foremen discussed the exhibit and suggested reasons for wearing clean, safe clothing on the job.

Circle Item No. 11—Reader Service Card→



Hitemp Wires, Inc., Westbury, N.Y., makes high-temperature insulated wires and cables for aircraft and missiles fields.

Graflex, Inc., Rochester, N.Y., produces photographic and electronic equipment of unusual versatility and reliability.

Hankins Container Company's Cleveland, Ohio, plant fabricates corrugated paper shipping cases and paper containers.

Chrysler Corporation's huge stamping plant in Twinsburg, Ohio, manufactures metal body parts for its many motorcars and trucks.

Pittsburgh COLOR DYNAMICS® helps to increase productive efficiency in a wide range of industries

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- **Reduces hazards of time-loss accidents**

• **Many hundreds of industrial plants** all over America use Pittsburgh COLOR DYNAMICS to improve productive efficiency and well-being of their workers. These industries range from textile and paper mills to factories making motorcars, farm tractors and airplanes. By following the principles of this modern painting system, work areas are made more pleasing. Workmanship and productivity are improved. Safety colors on controls, motorized equipment, cranes and traffic lanes reduce danger of accidents. And COLOR DYNAMICS assures these benefits at no greater cost than conventional maintenance painting.

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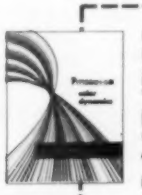

Pittsburgh Plate Glass Co., Paint Div.,
Department NSN-31, Pittsburgh 22, Pa.

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☐ Please have your representative call for a COLOR DYNAMICS survey without obligation on our part.

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They Work With Touchy Explosives

Technicians in the Experimental Fuze Unit of the Arsenal Operations Division at Picatinny Arsenal, Dover, N. J., work with hazards they cannot see—low-energy initiators which can be detonated by small electrical currents.

Low-energy explosives are so sensitive to electromagnetic fields that they may be detonated by impulses from the generator of a passing car or even static electricity created by an individual who is combing his hair.

Protected by a lucite shield, Frank Knuth, an explosives operator in the Experimental Fuze Unit of Picatinny Arsenal, prepares to remove a low-energy detonator from an assembly. "Wristlet" on left arm and tools are grounded to drain off electricity. Assemblies kept in grounded metal box (background.)

Safety experts have undertaken an elaborate safety program which greatly reduces the possibility of an accidental detonation. The entire laboratory is shielded with galvanized steel mesh to prevent penetration by stray radio waves. The floor is made of a special conductive rubber, grounded to drain off static electricity. All machines and tools are grounded.

All light switches and bulb sockets are specially-designed explosion-proof fixtures. Even telephones are designed to prevent emanation of electric waves.

Clothing of all workers is carefully monitored. Only conductive-soled shoes and cotton clothing are worn, since leather-soled shoes prevent drainage of static electricity and clothing of synthetic materials tends to create static electricity. Chemically-treated flame-resistant uniforms—with no pockets or cuffs which would collect explosive dust—are provided. Jewelry and combs are prohibited.

The footwear of persons entering the building is checked by an electronic detector to determine their conductivity. Workers shower and change uniforms to remove explosive dust before leaving the Arsenal.

When the explosive items are removed from their protective aluminum foil wrappings to be packed into casings, technicians don metal "wristlets" to which ground wires are attached. Operators handle the explosives behind transparent lucite barriers with only their hands and forearms extending around the shield. When a shield cannot be used, goggles, face masks, and special uniforms are worn.

Visitors drag metal canes after them to drain off static electricity. Nothing is overlooked to protect the safety of those who come into contact with sensitive Ordnance explosives.

Picatinny Arsenal is the U.S. Army Ordnance Corps' principal research and engineering center for ammunition and special weapons and has developed warheads for the country's most formidable nuclear and non-nuclear missiles.

Industrial Hygiene, Radiation Safety Courses Scheduled in 1961

Two special training classes for safety engineers, *Industrial Hygiene* and *Radiation Safety,* will be conducted at NSC headquarters in 1961.

Industrial Hygiene is a one-week training course covering the major problems related to industrial environments. It is designed to enable the safety engineer to provide a healthful place to work for all employees. Instructors in the course are specialists from industry, directors of industrial hygiene, doctors, or medical directors. The course will be held the week of March 27-31, 1961.

Radiation Safety is also a one-week course offered in cooperation with the Atomic Energy Commission. Instructors are members of the safety staff of Argonne National Laboratory, a representative of the Atomic Energy Commission, and other specialists from industry. Included in the one-week course is a day at Argonne Laboratory for demonstrations and practice in the use of detection instruments and monitoring. This course will be held the week of February 27 to March 3, 1961.

For further information write to: Director of Industrial Training, National Safety Council, 425 North Michigan Ave., Chicago 11.

Industrial Section Chairmen–1961

These men have been chosen to lead NSC industrial section activities during the new year. Vice President for Industry Walter E. Montgomery will coordinate their efforts.

Vice President for Industry Walter E. Montgomery, safety director, Quebec Asbestos Mining Association, Montreal, Canada.

Aerospace

General Chairman: M. M. Clancy, general supervisor, Safety, Insurance and Medical Services, Ryan Aeronautical Co., San Diego 12, Calif.

Vice Chairman: Kenneth L. Stebbins, director of safety, Lycoming Div., AVCO Manufacturing Corp., Stratford, Conn.

Automotive and Machine Shop

General Chairman: N. L. Christoffel, staff superintendent, safety, United Air Lines, Inc., Stapleton Airfield, Denver, Colo.

Vice Chairman: Dr. Gilbert E. Teal, senior scientist, Public Service Research Institute, Inc., Stamford, Conn.

Air Transport

General Chairman: George E. Humphrey, safety director, Cadillac Motor Car Div., General Motors Corp., Detroit, Mich.

Vice Chairman: R. M. Coe, safety director, Goodman Manufacturing Co., Chicago, Ill.

Cement, Quarry and Mineral Aggregates

General Chairman: Fred E. Storch, director, safety and personnel, The Whitehall Cement Mfg. Co., 160 Main Street, Cementon, Pa.

Vice Chairman: Howard F. Johnston, director of safety and personnel, The Funkhouser Mills, Division of Ruberoid Company, P.O. Box 569, Hagerstown, Md.

Chemical

General Chairman: E. G. Meiter, Ph.D., director, Industrial Hygiene Div., Employers Mutuals of Wausau, Milwaukee, Wis.

Vice Chairman: H. H. Fawcett, safety director, Research Laboratory, General Electric Co., Schenectady, N. Y.

Coal Mining

General Chairman: J. D. Reilly, vice president, Hanna Coal Co., Div. of Consolidation Coal Co., Cadiz, Ohio.

Vice Chairman: M. F. Brennan, president, District No. 7, United Mine Workers of America, Hazelton, Pa.

Construction

General Chairman: R. L. Moore, assistant secretary, Lumbermen's Mutual Casualty Co. & American Motorists Insurance Co., Chicago, Ill.

Vice Chairman: R. A. Wendell, chief, safety branch, South Atlantic Division, Corps of Engineers, U. S. Army, P. O. Box 1889, Atlanta 1, Ga.

Electrical Equipment

General Chairman: E. J. Turton, safety supervisor, Westinghouse Electric Corp., Buffalo, N. Y.

Vice Chairman: G. MacDonald, general manager, Self-Insurers Service, Inc., Chicago, Ill.

Fertilizer

General Chairman: Ansel I. Raney, safety director, Phillips Chemical Co., Bartlesville, Okla.

Vice Chairman: Gaither T. Newman, general manager, Industrial Relations, Insurance and Safety, Smith Douglass Co., Norfolk, Va.

Food and Beverage

General Chairman: Norman L. Heuer, safety director, Anheuser-Busch, Inc., St. Louis, Mo.

Vice Chairman: Leslie J. Quinker, director of safety, Schenley Distillers, Inc., Louisville, Ky.

Glass and Ceramics

General Chairman: E. L. Wray, Ball Brothers Co. Inc., Muncie, Ind.

Vice Chairman: Clinton Ballinger, Owens-Illinois Glass Co., Gas City, Ind.

Marine

General Chairman: Richard W. Berry, assistant vice president, United Fruit Co., Boston, Mass.

Vice Chairman: W. Lyle Bull, executive vice president, American Export Lines, New York, N.Y.

Meat Packing, Tanning and Leather Products

General Chairman: D. S. MacKenzie, director, Packinghouse Practices & Research, American Meat Institute, Chicago, Ill.

Vice Chairman: Carl Conklin, Whitehall Leather Co., Whitehall, Mich.

Metals

General Chairman: assistant safety director, Aluminum Co. of America, Pittsburgh, Pa.

Vice Chairman: E. D. Morgan, superintendent, Plant Protection and Safety, Bethlehem Plant, Bethlehem Steel Co., Bethlehem, Pa.

Mining

General Chairman: J. M. Smith, Asbestos Corp. Ltd., Thetford Mines, Quebec, Ca.

Vice Chairman: Al Kolu, Pickands-Mather & Co., Duluth, Minn.

Occupational Health Nursing

General Chairman: Clare B. Schwartz, R. N., Employers Mutuals of Wausau, River Forest, Ill.

—To page 50

The National Safety Council's Public Safety Department is interested in what industry is doing about water safety. If your company has encouraged swimming instruction or other water safety activities, please let NATIONAL SAFETY NEWS know about it. A postal card is good enough.

If you are just getting started, let us know what you have planned. If the program has been operating for a while, tell us how many people have been trained, and how you went about it.

Revise Booklet on Ammonium Nitrate

Recommended procedures for proper packaging, handling, transportation, and storage of fertilizer grade ammonium nitrate have been compiled by the Manufacturing Chemists' Association. Available at the MCA office, 1825 Connecticut Ave., Washington 9, for 50 cents a copy.

1961 Section Chairmen

—From page 49

Vice Chairman: Anne Kloiber, R. N., Pabst Brewing Co., Milwaukee 1, Wis.

Petroleum

General Chairman: R. D. Eberly, Standard Oil Co. (Ind.), Chicago, Ill.

Vice Chairman: Quincy V. Tuma, Texaco Inc., Houston 1, Tex.

Power Press and Forging

General Chairman: D. W. Stitt, assistant general manager, Industrial Relations, Continental Can Co., 100 E. 42nd St. New York 17, N. Y.

Vice Chairman: T. H. Bullard, safety manager, The Budd Co., Philadelphia, Pa.

Printing and Publishing

General Chairman: D. H. Grothaus, safety director, McCall Corp., Dayton, Ohio.

Vice Chairman: S. L. Juroff, safety coordinator, The New York Times, New York, N. Y.

Public Employee

General Chairman: H. P. Goodin, safety director, City of Minneapolis, Minneapolis, Minn.

Vice Chairman: Louise Ratner, safety & claims examiner, Ohio Dept. of Highways, Columbus, Ohio.

Public Utilities

General Chairman: R. E. McEldowney, Jr., safety director, United Fuel Gas Co., Charleston, W. Va.

Vice Chairman: V. L. Womeldorff, safety director, Illinois Power Co., Decatur, Ill.

Pulp and Paper

General Chairman: D. V. Hill, safety director, The Mead Corp., Kingsport Div., Kingsport, Tenn.

Vice Chairman: V. P. Coulon, safety director, Sealright-Oswego Falls Corp., Fulton, N. Y.

Railroad

General Chairman: G. C. Stromsoe, superintendent of safety, Atlantic Coast Line Railroad, Jacksonville, Fla.

Vice Chairman: H. C. Daulton, chief supervisor, Loss and Damage Prevention, Louisville & Nashville Railroad Co., Louisville, Ky.

Rubber

General Chairman: F. W. Sands, U. S. Rubber Co., Rockefeller Center, New York, N. Y.

Vice Chairman: Ray Hart, safety coordinator, Dayco Corp., Dayton, Ohio.

Textiles

General Chairman: A. E. Connelly, safety supervisor, E. I. du Pont de Nemours & Co., Martinsville, Va.

Vice Chairman: W. Kleinmann, safety director, Johnson & Johnson, Chicago, Ill.

Trades and Services

General Chairman: Harry A. Gustafson, safety director, The Drake Hotel, Chicago, Ill.

Vice Chairman: John M. Fisher, chairman, Security Committee, Sears Roebuck & Co., Chicago, Ill.

Wood Products

General Chairman: A. F. Reinwart, T. H. Mastin & Co., 722 Chestnut St. St. Louis, Mo.

Vice Chairman: William Huie, The Crossett Co., Crossett, Ark.

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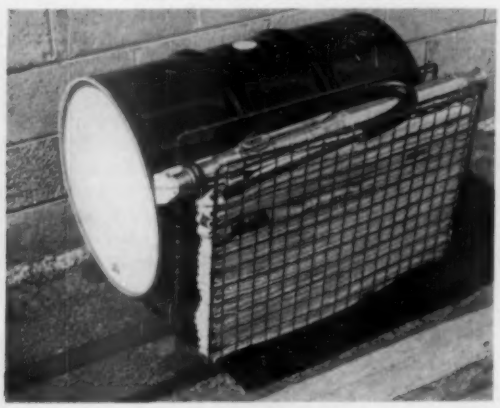
If so, you'll want to know about the National Aer-O-Foam Station. This new, compact, economical unit can be installed permanently near each hazard, ready to produce foam instantly and control the fire until the big equipment arrives.

Operated by only one man, the Aer-O-Foam Station delivers up to 600 gpm of tough foam for as long as 30 minutes. Ask for full details from your nearest National Foam office or distributor.

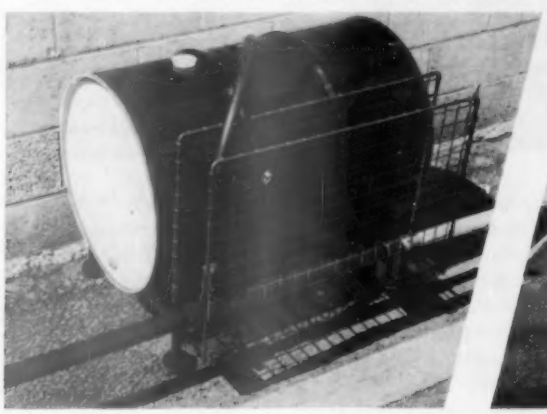
National Foam System, Inc.
West Chester, Pa.

Cover, easily removed, provides all-weather protection.

Hose and pick-up tube are stored in adjacent rack.



With hose stripped out and pick-up tube inserted in 55-gallon drum, water valve is opened. Foam is produced in seconds!



Circle Item No. 25—Reader Service Card

OFF THE JOB

Planning safety programs for your plant and community

By HARRY C. JOHNSON

NSC Staff Representative, OTJ Safety Committee

Keeping Your Chin Up

ORDINARILY any object worn about the neck is not there by accident. Diamond Jim Brady would wear a scarlet necktie to help set off to better advantage one of his sparkling jewels. And then there is that St. Louis woman, of "Blues" song fame, who wanted a diamond necklace. However, there is one kind of object that is worn about the neck as the *result* of an accident. In fact, the victim of an injury to the upper spine has no choice but to wear a brace around his neck, the uncomfortable looking thing shown below. Doctors refer to it as an adjustable cervical brace to immobilize cervical vertebras.

Anybody who has to wear an unnatural collar like this to keep his chin up has been hurt seriously. The kind of accidents leading to neck and spine injuries are many and lurk everywhere. The easiest way to get yourself a collar like this, probably, is in an automobile accident—in a rear collision resulting in "whiplash" injuries to the neck. Another way is one we hear about each summer—the swimmer who, without investigating, thinks he is diving into deep water. He left his safety mindedness behind him somewhere.

The best way to avoid having to wear such a support around your neck is to keep your own chin up and be alert for safety hazards on the job, at home, on vacation and when participating in the long weekend holidays this year. Traffic and swimming accidents aren't the only ways people get banged up or bumped off. They fall out of trees and off high places, and hurt themselves in many ways. Even at home, neck injuries can occur from falling down stairs, off ladders or slipping in the bathtub. Best thing to do? Have your own safety campaign planned in advance. Save your neck and possibly the necks of others. Let's leave the collars for horses.

The Illinois Central Railroad believes in safety and in making its safety ideas stretch. This dramatic item was first printed in the July 1960 issue of *Illinois Central Magazine*.

Later, it was produced in 11⅝ by 17-in. posters for tacking up along the IC system and for mailings to other interested parties.

The National Safety Council, among the latter category, received one of the posters. It's well-written, provocative, and worth reproducing—with permission of *Illinois Central Magazine*, of course.

Safety Engineer Hurt, Uses Injury to Plug Safety

Due to my many years of experience in this field, coupled with the fact that I have composed perhaps 1,000 safety slogans and prepared numerous items of promotional material covering off-the-job safety, it is quite natural that many of my co-workers find it amusingly ironic that I should break my leg.

This occurred recently while I was engaged in a do-it-yourself job of wiring a light fixture in the hallway of my home. Unfortunately, I was not permitted the luxury of a good accident alibi or the salve of freak circumstance to cover part of my embarrassment.

Partially in self-defense in response to the many questions of my curious friends, I composed a poem for publication in our plant paper. Since it affords my co-workers and particularly supervision an opportunity to poke a little fun not only at me personally but at safety in general, it has been a good thing.

B. F. SHINN

Here is Mr. Shinn's poetic defense:

As a safety engineer with my foot in a cast,
Others, of course, are kidding me.
And the question so many are prone to ask
Is "How could *you* so careless be?"
But, as the good who stray from the narrow way
Or the strong who may weakness show
As the brave whose fears sometimes betray
I, too, must force a grin, and though truly embarrassed—what can I say?
I simply got careless and now I must pay.
It happened at home as I lighted the hall
And though danger was there as I climbed on a chair
'Twas wearing a cuff on my overall
That tripped me up and caused my fall.
Just as I started to step down from the chair
I didn't expect it, but sure enough
My luck let me down and I saw in despair
My heel was caught in my trouser cuff.
Now the chair was wrong and cuff, too
But the lessons I learned, and don't you agree?
It's not what you know, it's what you do, and,
THAT ACCIDENTS CAN HAPPEN TO ME.

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B&L helps you fit the vision to the job with prescription safety lenses

To stop accidents before they happen, make sure your employees can *see well* on their jobs. For workers who need visual correction, the safest, most comfortable vision results by combining *correction* with *protection* in Bal-SAFE prescription lenses.

These lenses are products of a century of research and development. Their superiority is evident in their extra impact resistance, in their superb focus and surface qualities, and quality of ophthalmic glass used. Bausch & Lomb is the only manufacturer of professional quality ophthalmic lenses that operates its own glass plant—and controls glass quality from sand to finished product.

Local laboratory finishing is as superior as original factory product. All Bal-SAFE prescription lenses are heat treated by an exclusive patented process that gives them as much as 14 times the impact resistance required by government standards.

How do you make *sure* your employees see right for their jobs? A B&L representative will be glad to explain how your workers may benefit from Bal-SAFE prescription lenses, and how the B&L Ortho-Rater quickly and easily pinpoints those who need professional eye care. Call your supplier, or write: Bausch & Lomb, 90313 Lomb Park, Rochester 2, N. Y.

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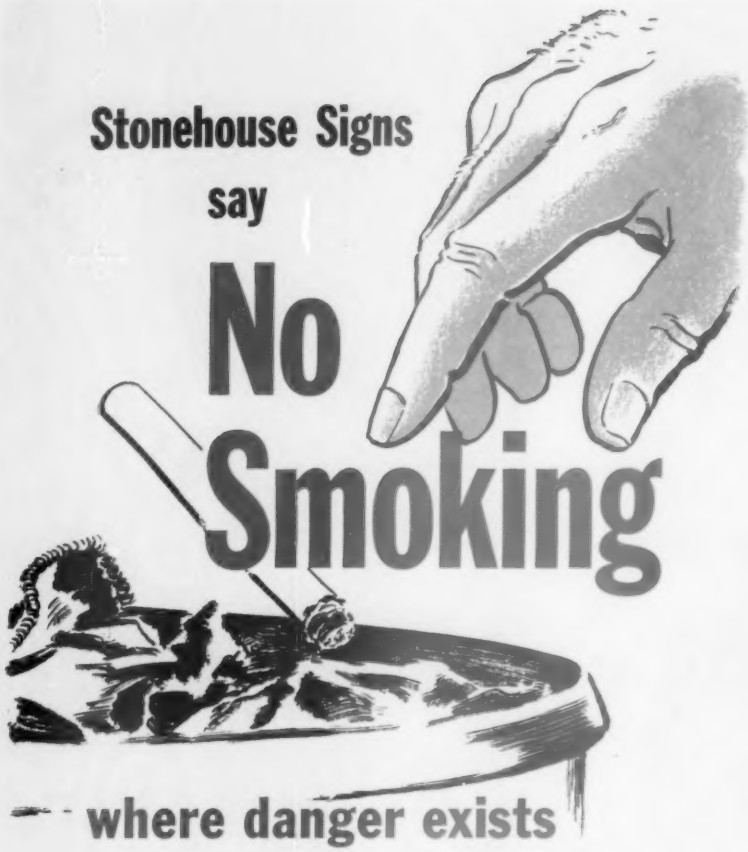

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Wire from Washington

—From page 21

committee on Radiation called for a re-examination of the Federal Radiation Council to strengthen its role in the review of federal agency activities in the radiation protection field. He also urged continued noninterference by federal agencies with operations of the National Committee on Radiation Protection and Measurements.

AEC also held an industrial advisory conference in connection with its re-evaluation of indemnity regulations prescribing amounts of financial protection, against nuclear accidents, that must be maintained by reactor licensees.

AEC issued new regulations establishing radiation safety requirements for persons using sealed sources of by-product material for radiography. These new regulations are to minimize the need for routine inclusion of special provisions applicable to radiography.

AEC believes the atomic age "has actually tended to reduce the average (radiation) exposure to individuals" by focusing attention on better shielding of X-ray equipment, shorter exposures, and avoidance of unnecessary uses.

The Ford Foundation made grants to three international scientific bodies to speed up defining, measuring, and limiting the hazards of man-made radiation.

The Interstate Commerce Commission deferred for a full year, ending January 1, 1963, effective compliance date of its order requiring not less than 66-2/3 per cent of each railroad's locomotive units to meet new rules and instructions for inspection and testing of locomotives.

The International Labor Organization's governing board placed on the agenda for the 1962 International Labor Conference the question of banning the sale, hire, or use of improperly guarded machinery.

The U.S. Public Health Service issued notice of proposed rule-making, to provide for a revision and redesignation of tests presently included in the standards for safety of biologic products.

Commercial Transportation. The Interstate Commerce Commission

Circle Item No. 18—Reader Service Card

Circle Item No. 14—Reader Service Card→

He's putting on his anti-freeze

Here's a man who's never stalled by cold weather. Let it go below freezing, he keeps well, warm, working—in anti-freeze safety boots that seal cold out and warmth in! Eight inches tall, these boots are *fully* insulated. They have Quilon®—tanned uppers for water and chemical resistance. They're completely leather-lined, storm-welted, and they have thick, oil-resistant Neo-cork soles and heels. Cushion insole, moccasin toe, steel toe-box. Thom McAn's style #S-4135, sizes D6-13, E6-12, EE6-13. Send coupon for details of our complete safety shoe line and free set of our popular safety posters.

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Thom McAn Safety Shoe Division
25 W. 43 St., N. Y. 36

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issued in final form a regulation providing for the use, under certain circumstances, of accident reports made by motor carriers as evidence in proceedings before the ICC and in court proceedings instituted by or at the request of ICC.

Such use is allowable "when the commission considers such action consistent with the public interest and necessary to the proper administration and enforcement of the provisions of the act, or of orders, rules, and regulations issued thereunder."

The ICC also amended its Motor Carrier Safety Regulations concerning turn emergency signals, lamps and reflectors, head lamps and road lighting lamps, reflectors, and batteries.

The ICC issued notice of intent to make extensive miscellaneous amendments to its regulations concerning the transportation of explosives and other dangerous articles.

Aviation Safety. The House Subcommittee on Transportation and Aeronautics held hearings on circumstances surrounding recent major air crashes involving a particular turboprop aircraft. The committee also scheduled mid-December hearings on the Federal Aviation Agency's making and enforcement of safety rules and on general safety.

The Civil Aeronautics Board adopted regulations for free transportation to aviation weather forecasters because, in part, "there is an urgent need for improvement in current methods of forecasting and reporting clear-air turbulence, icing, wind shear, ceiling, visibility, runway visual range, surface wind, and runway temperatures."

FAA proposed rules to standardize flight operations of aircraft operating in the vicinity of airports, with the primary aim of enhancing air safety. This is the first time FAA has proposed adoption of national standards for such traffic pattern rules.

This agency believes such a standard traffic area is necessary because of near mid-air collision incidents caused by the interference of enroute aircraft operating in airport traffic patterns.

FAA also has scheduled the largest expansion of its air navigation and air traffic control systems to date, with a program totalling $163,250,000 by June 30, 1961.

A new unit of FAA will develop the agency's airport safety program, including an aircraft fire and rescue program, airport ground safety standards, publication of suggested specification standards for mobile fire and rescue equipment, and establishment of an educational program to encourage adequate fire protection and rescue capability.

FAA has undertaken an intensive program to find methods to reduce the potential hazard to aircraft caused by birds and other wildlife.

FAA held an industry-government conference to discuss safety standards and operational-requirement problems of agricultural flying and aerial applicators.

Marine Safety. The U.S. Coast Guard released its second report on boating accidents, covering the first six months of 1960. The U.S.C.G. cautioned the statistics were not yet suitable for developing conclusions, and there has been uncertainty as to

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A COMPLETE 2-WAY
RADIO SYSTEM!

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TELEPATH
Miniature Communications System

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Transceiver unit is separated from head by high-impact plastic shield. Removable panel gives access to batteries.

High-impact plastic Hard-Hat provides 1" safety clearance on all sides . . . adjustable plastic headband permits safe, comfortable fit.

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FEATURES:

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- Crystal controlled superheterodyne receiver.
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- Long battery life (using inexpensive mercury cells).
- Transceiver Size: 3" x 6" x 1¼", complete with batteries.
- Transceiver Weight: 12 oz., complete with batteries.
- Controls: Helmet model has push-to-talk and on/off-volume controls on microphone. Belt-Clip Model has convenient shirt-clip control box containing push-to-talk and on/off-volume controls.
- Automatic Control: Voice-Operated Switch ("VOS") optional on all models.

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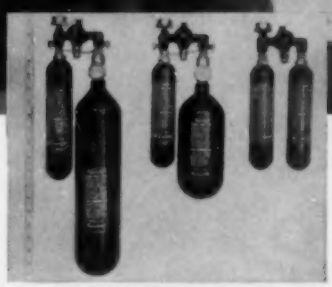

Light and Compact in All Sizes. On PocketAIRE Models 1520, 1510 and 1500 one 5-minute cylinder is the standard "escape" feature. Working cylinders are for full 25 minutes, full 15 minutes and full 5 minutes. Total weights are 10 lbs., 8 lbs. and 6 lbs. Available in partial and full-face masks.

Where seconds count... PocketAIRE® counts most!

Now firemen can add precious minutes to their search for trapped victims. Rockwood's lightweight PocketAIRE, the most compact, self-contained breathing apparatus made, goes into action in 7 to 10 seconds . . . enabling firemen to work faster and more efficiently without the hindrance of bulky equipment.

What's more, by using pure oxygen instead of compressed air, PocketAIRE supplies the most concentrated, most effective element to safeguard human breathing. Another extra feature is the safety cylinder that allows 5 minutes for escape. PocketAIRE cylinders, all sizes, cost only pennies to refill, anywhere.

Get details on how you can protect every fireman in your department with safe, compact, economical PocketAIRE. Write Rockwood Sprinkler Company, Portable Fire Protection Division, 2012 Harlow Street, Worcester 5, Massachusetts.

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coverage of boating accidents.

Figures show 815 accidents, involving 1,031 vessels, and causing 261 deaths, 274 injuries, and property damage of $1,087,800. More than one-third (36 per cent) of all accidents involved operators with 500-plus hours of experience (the highest experience category listed), and 61 per cent involved outboard motors.

Regarding types of accidents to vessel, 54 per cent were due to collisions of vessels, 16 per cent to collisions with objects, and 13 per cent to capsizing. The largest single cause for personnel accidents was falling overboard, as a result of which 63 persons were killed and 7 injured.

In broad categories, the principal causes of fatalities were: human fault, 70 per cent; weather/water conditions, 11 per cent; mechanical/structural failures, 4 per cent; unknown or not classified, 15 per cent. As of October 31, 1960, there were 2,356,374 boats under federal law.

The U.S.C.G. also issued rules concerning vessels using nuclear energy or handling radioactive materials.

These rules are general in nature and authorize detailed requirements applicable to each vessel pending development of specific safety standards based on additional service experience expected to be gained from operation of the *N.S. Savannah*, the first western nuclear-powered merchant ship.

The U.S. Maritime Administration announced that the *N.S. Savannah* was safe and could enter any port used by other merchant ships without danger to the local population. New U.S.C.G. regulations deal with lifesaving equipment and markings for emergency equipment on artificial islands and fixed structures.

Under the auspices of the Inter-Governmental Maritime Consultative Organization, a United Nations meeting convened on means of promoting safety at sea. On the agenda was consideration of the 28 recommendations made by the International Conference on Safety of Life at Sea.

Federal Government. The Department of Health, Education and Welfare advised its regional directors of plans to establish a Division of Accident Prevention in the Public Health Service.

The Federal Bureau of Employees Compensation reported that in 1959 work injuries to federal employees rose for the fifth consecutive year. The 100,228 injuries represent a 5 per cent frequency rate increase over 1958, although the severity rate increased less than 1.5 per cent.

Close to 2.6 million days of productive time were lost, and the total direct incurred loss was $29.9 million, or $12.39 per employee covered, an increase of 5.6 per cent over the previous year.

National Health Survey. In distribution, incidence of injuries was highest in the farm population, with 32.6 days of disability per year for rural farm residents, 29.3 for rural non-farm, and 28.0 for urban. Injuries were the second most common acute condition category in all regions of the country except the northeast.

Public Health Service Report. The U.S.P.H.S. received an extensive report, "The Role of Human Factors in Accident Prevention," prepared by private experts.

STAYS PUT!

Your men may never have to stand on their hands . . . but whatever the demands of the job, you can be sure Hedgard will stay put without the discomfort of a chin strap.
The exclusive Davis plastic, snap-in suspension is designed to fit all head sizes snugly . . . and so comfortably, that your men will *want* to wear them!
The high impact Hedgard is available in a Dielectric or All Plastic model, unaffected by heat or cold.
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CUT SWEEPING TIME Don't just push dust around–pick it up with SUPER HIL-TONE® surface maintainer, and get rid of it once and for all. Saves labor time–protects against spread of air-borne bacteria –helps save the floor and improves appearance.

SUPER HIL-TONE has the unique property of AD-SORB-ING dust (gathers and holds, with a kind of magnetic attraction). Pulls the dust cleanly up off the floor, and holds it in the sweeping mop. Leaves no tell-tale trail.

After sweeping, a microscopic non-oily film of SUPER HIL-TONE cushions against traffic wear–saves the wax or finish film–pulls dust out of the air and holds it until next sweeping. Keeps your whole building healthier. A "must" for dust control and labor-saving maintenance.

Sweeping with SUPER HIL-TONE takes a lot less time. You scrub less often. Moreover, the SUPER HIL-TONE film brightens the gloss of your floor finish, protects it, makes it wear longer.

SUPER HIL-TONE is safe on the floor, safe in the mop, safe in storage. U/L listed "classified as to fire hazard".

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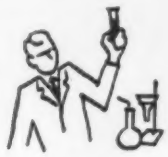
OCCUPATIONAL HEALTH

By J. T. SIEDLECKI
Industrial Hygienist, NSC



Abstracts of current literature on occupational hygiene, medicine, and nursing

Epidemiologists Study Silica Dust Hazard

"Epidemiologic Methods in the Study of Silicosis." By H. M. Parrish, M.D., D.P.H., and H. B. Ashe, B.S. *Archives of Environmental Health*. Vol. 1, No. 2. August 1960. Pp. 129-139.

THE AUTHORS present statistics regarding Public Health Service reports on population exposed to risk from silica dust. This figure probably ranges from 1,500,000 to 2,000,000 workers.

According to the National Office of Vital Statistics, about 2,000 deaths per year are attributed to occupational pneumoconiosis. Since silicosis is a long-term chronic illness, the authors feel methods and techniques of modern chronic disease epidemiology can be used in studies.

These reasons are a basis for considering silicosis as a chronic disease:

1. Long incubation or latent period.
2. Progression rather than regression.
3. Producing disability.
4. No cure at the present time.
5. Long period of medical supervision and care required for advanced silicotic.

The authors review procedures and techniques used to study silicosis in the past. They suggest approaches of chronic disease in epidemiology that may be useful in future studies. They hope the discussion points out fallacies and sources of bias in past studies of silicosis. The Vermont granite industry is used to illustrate epidemiologic principles.

A silicosis case-finding program similar to a mass tuberculosis case program is suggested as a practical way to study the problem. They recommend at least three observers read each chest X ray independently on two different occasions using standard films for comparative purposes.

The authors discuss various dust-collection instruments and the instrument of choice of various investigators of different countries. They recommend standard methods of dust collection in counting. They discuss the limitations and bias in evaluation of dust exposures. They mention newer techniques of correlating dust exposures for the human disease.

Metabolism and 1,1,1-Trichloroethane

"The Metabolism of 1,1,1-Trichloroethane by a Rat." By C. L. Hake, PhD.; T. B. Waggoner, B.S.; D. M. Robertson, PhD.; and D. K. Rowe, M.S. *Archives of Environmental Health*. Vol. 1, No. 2. August 1960. Pp. 101-105.

BECAUSE 1,1,1-TRICHLOROETHANE (Methyl Chloroform) is considerably less toxic than carbon tetrachloride and yet structurally very similar, the authors decided to determine the fate of the compound in the lab rat by intraperitoneal injection.

In this study methyl chloroform was prepared, having a tagged radioactive carbon (C^{14}). The results of this study indicated 99 per cent of the unchanged compound is rapidly excreted from the rat via the respiratory system.

Approximately ½ per cent of the dose injected was converted into $C^{14}O_2$. The only other metabolite was 2,2,2-trichloroethanol-2-C^{14} excreted as a glucuronide in the urine.

The authors conclude the favorable toxicological picture found on acute and chronic vapor exposures to animals to 1,1,1-trichloroethane is due to the ability of the animal to excrete the chemical rapidly and almost totally via the respiratory system.

Toxicity of Bromochloromethane

"The Toxicity of Bromochloromethane (Methylene Chlorobromide) as Determined on Laboratory Animals." By T. R. Torkelson, M. S.; F. Oyen, and V. K. Rowe, M. S. *American Industrial Hygiene Association Journal*, Vol. 21, No. 4. August 1960. Pp. 275-286.

BROMOCHLOROMETHANE is the commonly used vapor extinguisher known either as CB or the more generally used designation BCM. The data published on the toxicity of this chemical has been somewhat inconsistent.

The authors' purpose is to clarify this study. In this paper the authors report on results of repeated exposures to animals to 1000, 500, 370, and 130 ppm for two to six months. Results are presented on oral incubation to rats, topical application to skin and eyes of rabbits, and acute skin absorption studies on rabbits.

They found there was very little injury from single or repeated exposures of this chemical. Deaths from acute vapor exposures were due to anesthesia. The authors conclude there is little likelihood of any organic injury to be present,

—*To page 62*

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Approximately 25 times safer than carbon tetrachloride, National's SS-25 is used by America's largest industries. SS-25 induces no moisture into windings of electric motors . . . leaves no residue . . . completely eliminates greases and oils. SS-25 has a dielectric constant of more than 25,000 volts . . . and no flash at the boiling point. SS-25 is the safe answer for cleaning electric motors, components, etc. Classified as to fire hazard only by Underwriters Laboratories.

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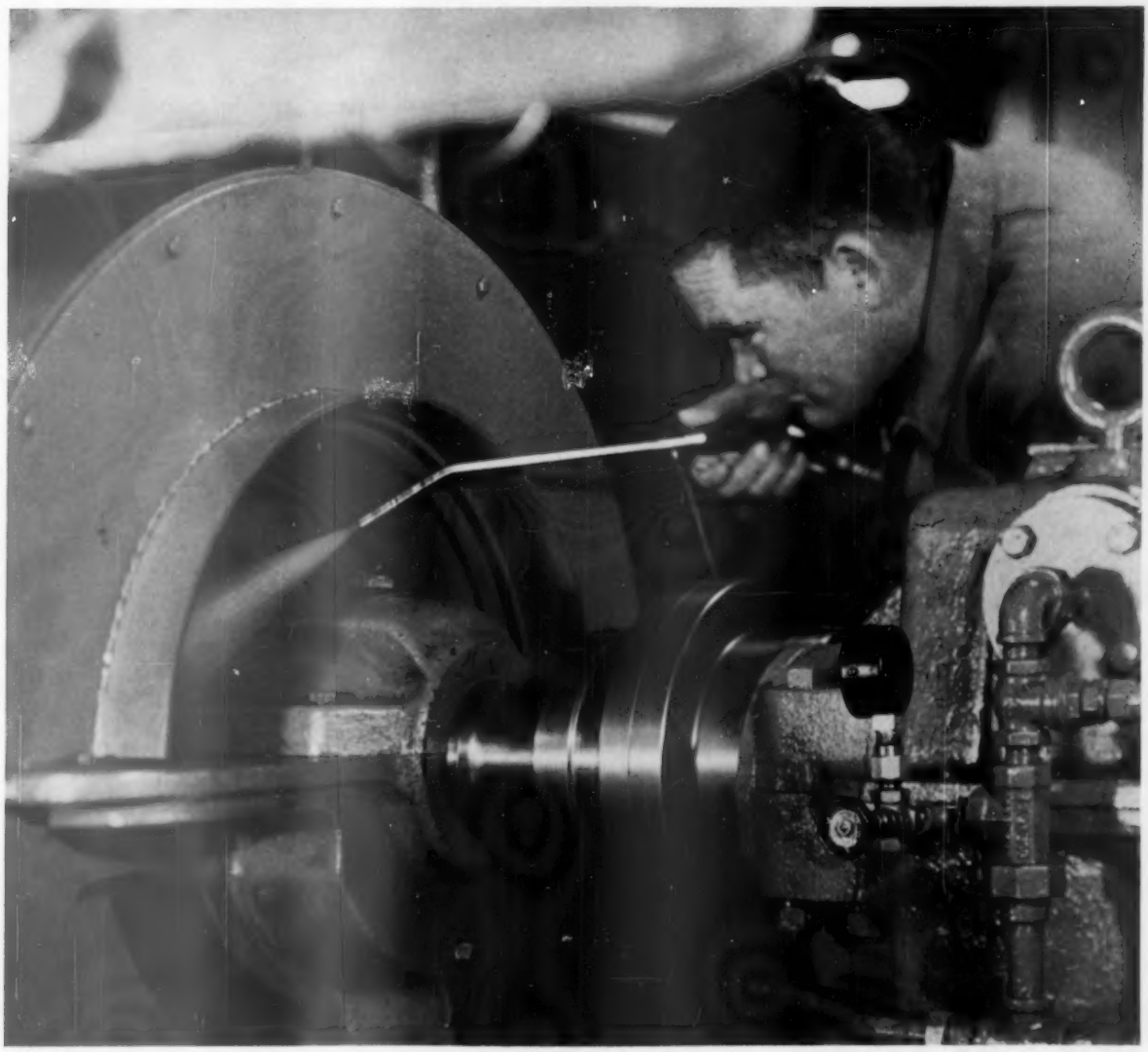


Occupational Health

—From page 60

if repeated seven-hour daily exposures are limited to 400 ppm or less.

However, they have found blood bromide levels were high in animals exposed to this concentration. Although no adverse effects typical of bromism were noted, it is recommended that a time-weighted average of all exposures would not exceed 200 parts per million.

(No threshold limit value for bromochloromethane has yet been adopted by the American Conference of Governmental Industrial Hygienists.) The authors in this article give these precautions for safe handling of bromochloromethane:

1. Containers should be properly labeled so ingestion due to mistake in identity cannot occur.

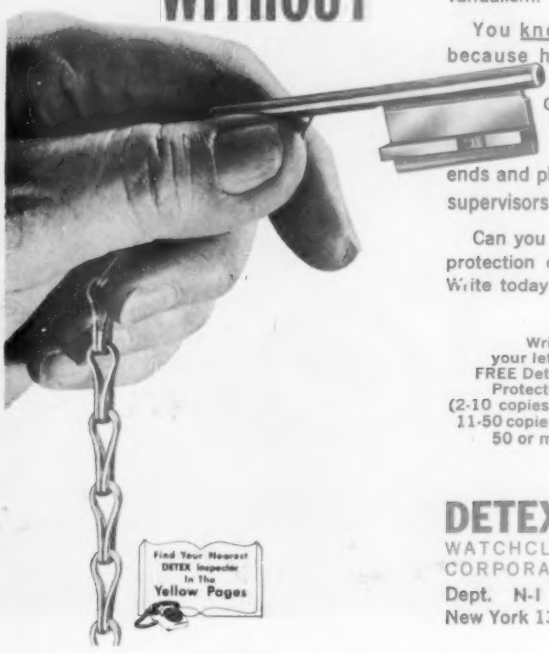
2. Where there is a possibility of contact of the eyes with the liquid, safety glasses—preferably with side shields or a face shield—are recommended. If material does get into the eyes, they should be flushed thoroughly with water, and medical attention should be obtained.

There is no practical hazard from the standpoint of irritation or skin absorption. However, prolonged contact can cause dermatitis. Clothing contaminated with this chemical should be removed promptly and not worn again until free of all contaminating material.

3. Inhalation of vapors can cause anesthesia. However, if overcome by the vapors, the individual should be removed to fresh air and medical attention given.

If breathing stops, artificial respiration should be administered. Vapor concentration in work rooms offering repeated exposure should be maintained below 400 ppm. with a time-weighted average of exposure not to exceed 200 ppm.

A KEY MAN NO PLANT CAN DO WITHOUT



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Legal Aspects of Occupational Dermatitis

"Court Cases of Alleged Occupational Dermatitis." By L. Schwartz. *Industrial Medicine and Surgery*, Volume 29, No. 11. November 1960. Pp. 540-544.

SEVERAL CASES are discussed involving alleged occupational dermatitis that have been disputed in court or before compensation boards because of difficulty in diagnosis.

Several of these cases involve occupational origin where the worker has not recovered in two or three months even though away from work, or where recurrent attacks of dermatitis occurred. The insurance carrier or the employer contends the worker must be exposed to irritant substance at home.

Often a worker contends, because he has been sensitized to a particular occupationally encountered skin irritant, he is now sensitive to other materials and substances to which he was not sensitive before.

There have been workers with inherited atopic eczema who will not admit to any type of skin disorder prior to their alleged occupational dermatitis and state that only since then has their skin become inflamed on contact with various substances.

Dr. Schwartz suggests, since lay judges, juries and referees know little about medicine and dermatology, a panel of disinterested medical experts be hired and paid by compensation boards to judge the merits of a medical case.

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External Radiation

—From page 20

tensity the lead shielding might be completely disrupted.

Use a rule of thumb: One curie of cobalt gives 15 r per hour at 1 ft. from the source. Assume the source is 1,000 curies.

Apply your scale to the distance from the radiation source to the man ventilating the roof. The scale distance is approximately 20 ft. By our rule of thumb, a 1,000-curie cobalt source would give off 15,000 r per hour at 1 ft.

Twenty feet is 20 times 1 ft., so the radiation level, by the law of inverse squares, would be 1/400th of what it is at 1 ft. or about 38 r per hour.

The man at the top of the aerial ladder is about 27 ft. away from the source. So 27 squared equals 729 and 1/729th of 15,000 gives us a radiation level at that point of about 25 r per hour.

Men working in the stairway are about 17 ft. from the source. So 17 squared equals 289 and 1/289th of 15,000 gives us a radiation level of about 52 r per hour at that point in the stairway.

The men doing the salvage work on the first floor are about 37 ft. from the source. So 37 squared equals 1,369 and 1/1369th of 15,000 gives us about 11 r per hour at that point.

The man standing at the foot of the aerial ladder is about 52 ft. from the source. The radiation there would be 1/2700th of the radiation level at 1 ft. or about 6 r per hour.

Compute radiation levels to which the two men raising the ladder are exposed, and the radiation level for the men operating behind the parapet wall of the next building.

These figures are higher than the maximum possible, and they give no credit to self-absorption or to any shielding provided by the container, by the walls of the building, or by the parapet wall of the building across the alley, as in the case of the men on the roof.

The 15 r per hour per curie at 1 ft. rule of thumb applies only to cobalt 60. Later we will discuss other common isotopes.

In addition to considering the firefighting problem, we must also realize our responsibility to other people in the area.

Normally, at a fire of this type we would probably not think of evacuating personnel in the machine shop in the building across the alley, unless it appeared possible the wall might collapse on their building.

Here we see the radiation level in the machine shop near the windows might be close to 5 r per hour. A radiation exposure of this degree to personnel accomplishing nothing in the emergency situation would be unacceptable, and it is necessary that these people be removed from the area.

Our problem has shown us normal firefighting operations in a situation of this type might bring about unduly high radiation exposure to personnel.

The radiation situation would make it impossible for us to fight the fire in the normal manner and limit the damage in the fire building. But, even under the conditions

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cited, it is possible for us to accomplish our major objective to confine the fire to the building of origin.

Assume the presence of the radiation source, the nature of the shielding, and the hazard to the stability of the shielding by the basically combustible nature of the building have been discovered as part of the department's prefire planning program. The problem is how to plan.

The existence of such a hazard on our area indicates it is absolutely necessary that the fire department have available to it immediately monitoring service capable of making high-level radiation measurements.

The monitoring service may be provided within the fire department, by another agency, or by the owner of the source. In any case, an alarm of fire from this building should bring about, one way or another, the immediate response of qualified personnel with adequate well-calibrated instruments.

Even without instruments, we can make basic firefighting plans with the facts at our disposal which will bring about our objective of limiting the fire to the building of origin without unduly hazarding personnel.

Because of the high radiation areas which might be expected in the building and close to it, and in the absence of instrumentation, we must assume under the severe fire conditions given that the source has become completely unshielded.

We must also assume that radiation levels of the intensities we have previously discussed do exist in the area.

The only practical means available to us for the protection of our personnel are time and distance. We have seen the radiation level at the street in front of the building would be about 5 r per hour.

Even under the worst conditions, an engine company should not require more than 10 minutes in front of the building to get a heavy stream appliance set up and operating on the fire.

As 10 minutes is 1/6 of an hour, this would mean the maximum radiation exposure of personnel setting up the deck gun would be about 1 r.

We saw that the radiation level at the ladder pipe was 25 r per hour. A man going up to the top of the ladder pipe to adjust it might take as long as 5 min. for the round trip. His exposure during the 5-min. period would vary from the 5 r at the base of the ladder to the 25 r at the tip.

Calculation of total dose from varying exposures is a more difficult problem than we wish to tackle, so on the conservative side compute our problem at the maximum rate of 25 r per hour.

Five minutes is 1/12 of an hour. His exposure, therefore, in performing this operation would not exceed 2 r.

Operations that necessitate personnel remaining close to the source for extended periods, such as salvage work, manning inside lines up the stairway, and roof ventilation, would require radiation exposures too high for the good being accomplished under the circumstances.

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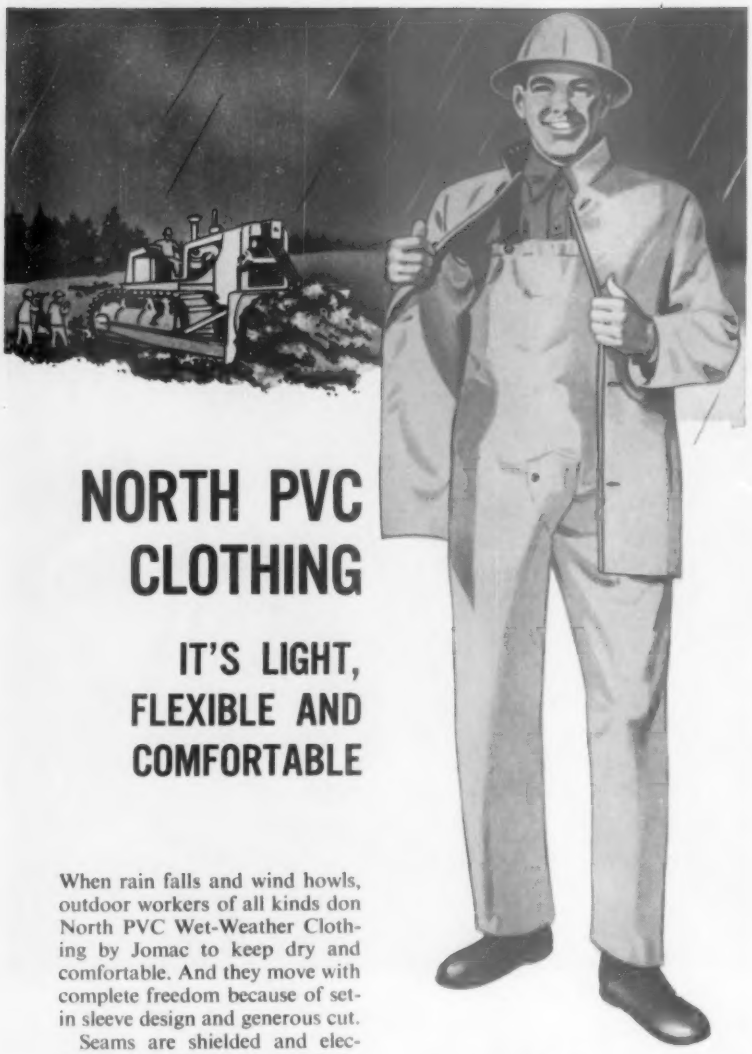

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ticed using heavy stream appliances which can be set up and from which personnel can withdraw except for periodic trips to adjust the direction of the stream.

Personnel not directly contributing to the firefighting effort, including personnel in nearby buildings, newspaper reporters, auxiliary personnel, and first aid crews standing by should be removed a good distance from the building.

Another point we would keep strongly in mind in a situation of this type, without instrumentation, is: the container may not have yet been heated to the melting point or may be only partially damaged, and a great deal of good would be accomplished by getting a stream on the container immediately.

Our prefire planning would take this into account and might result in the relocation of the container where the fire department could get a stream over it more easily.

Preplanning might also be done along these lines. Assuming the radiation source is unshielded, the radiation level would be about 4.6 r per hour at a given point, such as the sprinkler siamese at the front of the adjacent building.

The measured radiation level at this point at the time of arrival is 1.1 r per hour. This would indicate the shielding is partially disrupted but is about 75 per cent effective, and radiation levels in the area might be expected to be about 25 per cent of those which would be received from the totally unshielded source. No operation should be carried on inside on the basis of a single distant observation of this type, because no effect is given to the accidental shielding from the building which may cause the radiation level to vary considerably at different locations, all of which are the same distance from the source. All inside operations should be carried on only when personnel can be accompanied by monitors.

It is unlikely the radiation situation will improve. If the shielding is partially melted, we may be able to keep matters from getting worse by preventing its further melting.

From the situations shown, another conclusion easily drawn is: if we expect monitoring to be done up in that stairway, at the tip of the

—To page 72

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Circle Item No. 27—Reader Service Card→

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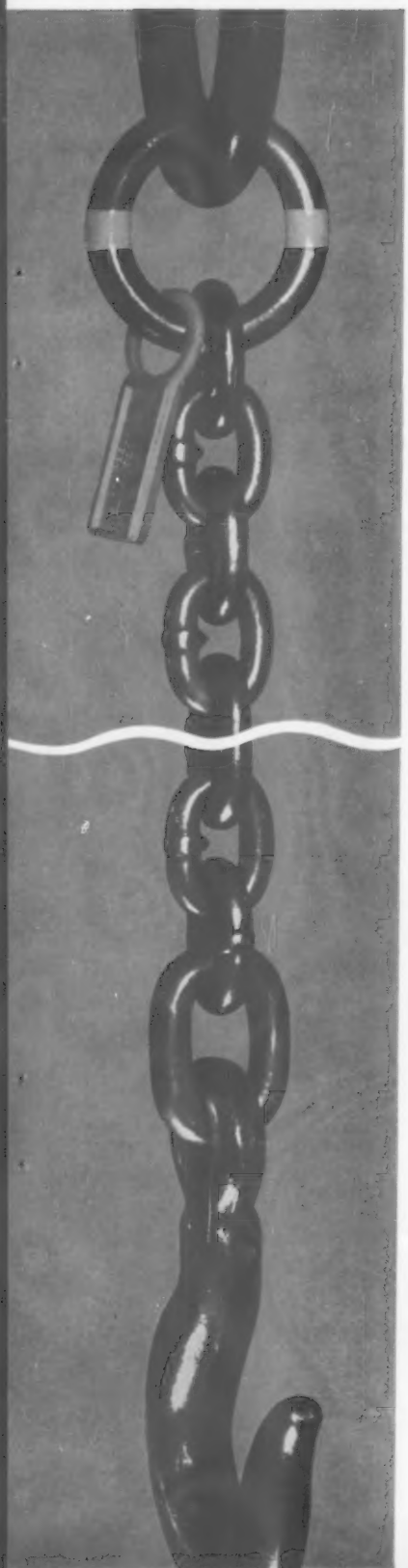

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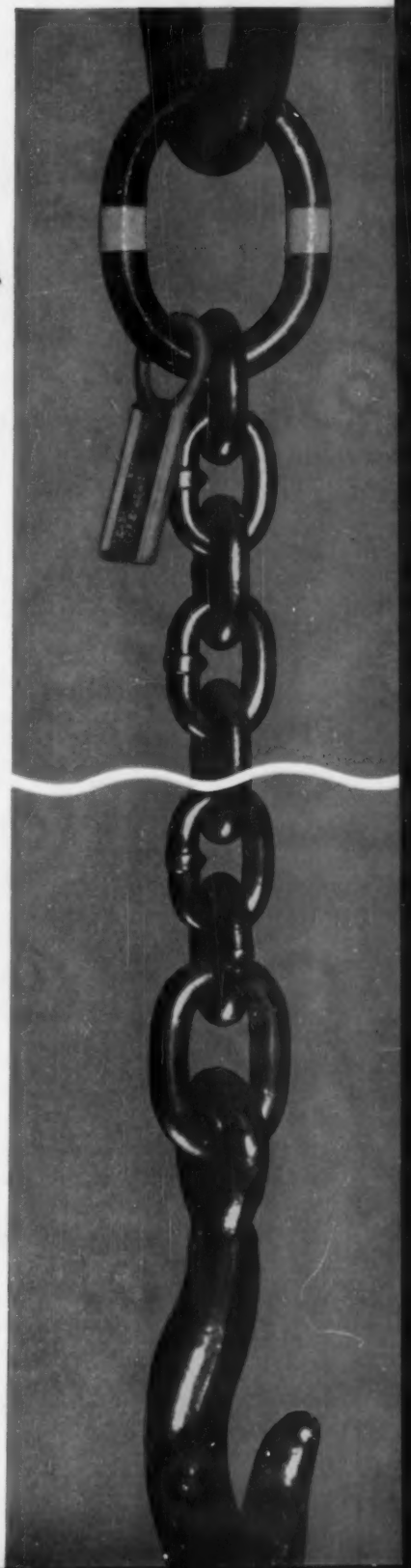

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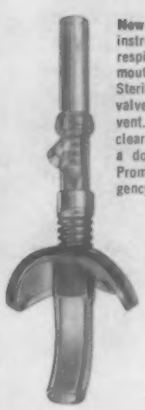
New Brook Airway—Medical instrument for direct artificial respiration without mouth-to-mouth contact. Clear plastic. Sterilizable. One-way nonreturn valve and special exhalation vent. Oral airway provides a clear air passage. Designed by a doctor for use by laymen. Promotes safe, effective emergency resuscitation.



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aerial ladder, or on the roof over the fire, we can expect this will be done only by firemen trained as monitors—men who can work under distressing conditions, simultaneously using radiation meters, masks, walkie-talkie radios, and flashlights.

As we move in on the situation, it is necessary that the monitoring effort be intensified. A partial melting of a container may give an unbalanced geometry to the shielding, with radiation levels becoming far higher in one direction than in another.

We cannot assume because the radiation level is "X" r per hour at 10 ft. from the source in one direction that it will necessarily be the same level at 10 ft. from the source in another direction. Each situation must be monitored.

The question is often asked: "To how much radiation can the men be exposed?" At this writing, in the case of a city fire department, this is a matter to be determined by the chief.

The National Committee on Radiation Protection has stated that a single 25 r once-in-a-lifetime emergency dose should have no effect on the radiation status of the individual.

In a problem of this type, particularly where sufficient personnel would be available to rotate assignments, every effort should be made to keep the individual exposures down to preserve as much of each man's potential radiation exposure for future operations as possible.

How well we can accomplish this objective will be related to how well we do our prefire planning and how well indoctrinated our personnel are to the fact that necessary radiation exposures can be assumed to get the job done, but unnecessary radiation exposures accomplishing no useful purpose should be avoided.

In many respects, the situation is similar to that of a fire in a condemned building, known to be on the point of collapse. Generally, we would not send our people into the building.

We would set up lines to prevent the extension of the fire to exposures, and we would expose the minimum number of people for the shortest period to danger of collapsing walls.

In the worst conceivable situation in such a fire, the source would become completely unshielded and the building would collapse, burying the source in the debris.

Under these circumstances, no true overhauling could be accomplished. It would be necessary to flood the building with water from a distance until such time as the fire is extinguished.

The problem of the recovery of the source would be a most difficult one and would require competent advice. This would be available from the AEC through the operation of the Radiological Assistance Plan.

It might be necessary to evacuate nearby buildings and close the street in front of the building until the source could be recovered.

The obvious question is: "Should a situation with such a potential be permitted?" To the best of my knowledge, no situation of this type

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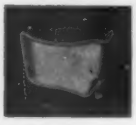

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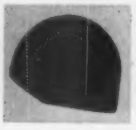

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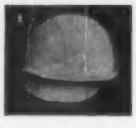

Model HLP (Universal size). Features rayon screen laminated within two layers of wet strength paper. Cotton edge binding. Form fitting, highly absorbent, costs very little. For perspiration absorption and for use as a sanitary "visitor's" liner.

Model FLF (Small and large sizes). For cold to frigid climates. Heavy gray outer flannel, red knit lining. Long neck for extra wind protection. Chin strap with adjustable snap. Provision for snap-on MF Mouthpiece to give additional face protection!

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exists. To get all elements into the problem, the worst possible sort of situation was imagined. It is certainly possible a potential situation similar to the one outlined could exist in a plant where large gamma radiation sources are in use, or in a transportation situation (a freight warehouse), where such a container might be in transit.

If any fire department discovers such a potential situation exists, it should be brought to the attention of the management and suitable fire protection recommendation made.

This might require the provision of automatic sprinklers in the building; the relocation of the radiation source to another location in the stair tower, where it would not be subjected to the full heat of the fire; the protection of fire resistant safe-type protection around the source; or some other suitable means of eliminating the hazard.

The licensee may never realize this hazard until it is brought to his attention by the fire department. It certainly appears reasonable to assume he will be more than willing to cooperate with the fire department in the provision of suitable protection.

If he is not willing to do so, if the fire department is not satisfied the steps he proposes are adequate for the protection of firefighters, and if AEC licensed material is involved, the fire department should make appropriate representations to the office of the AEC assigned to cover their geographical area.

If an investigation by the Commission supports the complaint made by the fire department, the licensees would be ordered to take necessary corrective action.

The radiation level from sources larger or smaller than 1,000 curies of cobalt can be computed by using our rule of thumb—1 curie of cobalt 60 gives off 15 r at 1 foot.

The high level multicurie sources should give us much less trouble, because their normal handling requires massive shielding and special remote control equipment.

Such sources are invariably installed in facilities built for this purpose, and in most cases the shielding is provided by building it into the ground.

When in use, the source is pulled up out of the ground into the build-

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Proper safeguards are uppermost in importance in protecting tanks which contain flammable gases and liquids in the event of fire. For example, tanks must be guarded against extreme heat exposure. Leaking gas, if it should develop, must be diluted to the point where it will not burn. And fire, if it should occur, must be localized and controlled or extinguished.

With a Grinnell Water Spray System, you get such protection.

Before heat raises tank temperatures dangerously, an enveloping spray of water provides instant cooling, reducing internal pressure which helps prevent rupture. In addition, air turbulence is created (even in still air) which, in conjunction with the water vapor from the spray, helps dilute the flammable vapors to control or extinguish the fire. Flammable products which cannot be safely extinguished can be safely burned off under the protecting water spray.

FREE REFERENCE MANUAL. For a comprehensive picture of all the most advanced methods of special hazard fire protection, request your free copy of "Special Hazard Fire Protection by Grinnell." Write Grinnell Company, Providence 1, R. I. Branches in principal cities.

GRINNELL WATER SPRAY SYSTEM under test at the Marietta, Ohio plant of the Bakelite Union Carbide Plastic Company, a division of the Union Carbide Corporation. Water — when it is applied in time and distributed over the surfaces efficiently by a properly engineered system — is most effective in limiting tank fires and controlling their spread.

GRINNELL

FIRE PROTECTION SYSTEMS SINCE 1870

ing. In any such facility I have seen, there has been little or no combustible material which would present any fire problem.

In the event there should be a fire, the procedure is to drop the source back into the shield, and there is no radiation problem.

We have seen that even an extremely high radiation exposure situation does not make it impossible for a fire department to do its primary job—confining a fire to the building of origin and preventing the start of a conflagration.

That such a situation might exist in our city makes it imperative for us to learn where radiation hazards are, their nature and degree. In short, we should do an adequate prefire planning job.

Except for a transportation situation, the possibility is remote of a serious fire disrupting the shielding of a 1,000-curie cobalt source or similar high-level external radiation source.

Shielding requirements for the use of these units are so heavy it would be almost impossible to locate such a unit on the upper story of a brick and wooden joist building.

Much more likely is a fire problem involving sources up to about 100 curies of cobalt 60. If we apply the same conditions to the 100-curie source as we did previously to the 1,000-curie source, we see the radiation levels would be 1/10th as much and permissible time limits would be 10 times as much.

It is necessary for the fire department to make an evaluation of the strength of the source, the nature of the shielding, and the effect the fire might have on the shielding, in each case where there is a large radiation source.

If it is determined the fire can disrupt the shielding, the prefire planning must take this into account.

I have written almost exclusively about cobalt 60 as a source of gamma radiation. Cobalt is the most popular source of gamma radiation because, of all isotopes readily available (except sodium, which has a quite short half-life), it gives the most roentgens per curie. It is the most widely used isotope when penetrating external radiation is desired by the user.

For instance, iridium 192 gives us about 5.5 r per hour per curie at 1 ft. If the source of the radiation was 1,000 curies of iridium, radiation levels at all locations would be about ⅓ of those we calculated for cobalt.

Iron 59 gives us 6.8 r per hour per curie at 1 ft, so the radiation levels would be less than half if our source was 1,000 curies of iron rather than cobalt.

Note the corresponding figure for sodium, since it is higher than cobalt. Sodium 24 would give us about 21 r per hour per curie at 1 ft. Because of its short half-life, sodium is used only in highly specialized situations.

The gamma radiation levels at 1 ft. for some other common radioisotopes are: Potassium 42—6.84 r/hr @ 1 ft. per curie; Iodine 131—2.7 r/hr @ 1 ft. per curie; Gold 198—2.7 r/hr @ 1 ft. per curie. Rule of thumb for any gamma emitter: 6 × average energy in mev per disintegration = r/hr at 1 ft. per curie.

Cobalt has another characteristic which makes it less of a problem

Mr. Fanshaw had a *Space-Age* Problem

Mr. Fanshaw was concerned over the conquest of space. Actually, it was lack of space that disturbed him.

His store room was jammed to the gills with drum upon drum of Floor Cleaners. One for asphalt tile, one for rubber, another for terrazzo floors. Sometimes labels peeled off or became illegible and a cleaning crew used the wrong drum. Then Mr. Fanshaw *really* had a problem.

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Like other Maintenance Chiefs in leading Hospitals and industrial buildings, Mr. Fanshaw now uses TEXINOL *exclusively*. His space problem is solved. What's more, he has the cleanest floors in town! Get the full story on TEXINOL from your LEGGE Floor Specialist. No obligation. Or clip the coupon today.

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◀ Casual oxford or chukka styles in this exclusive Haus of Krause construction that permits the use of lightweight materials in LITE KNIGHT Safety Shoes while meeting all ASA requirements for toe protection.

Industrial jobbers interested in acquiring a franchise, write to Haus of Krause, Rockford, Mich.

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SAFETY SHOES
H/K

from the fire service point of view, in that cobalt has an extremely high melting temperature. It is unlikely that a cobalt source would be dispersed in the event of a fire. Also, the cobalt used to make sources is generally in the form of solid pieces of metal.

In other radiation sources for gamma radiation, such as iridium, the material may be in the form of a powder. If the capsule is broken open, radioactive material may be spread around the area.

If the fact that a person is exposed to radiation is not known until after the fire has occurred, we have seen the approximate maximum radiation exposure received can be calculated.

The maximum possible radiation hazard levels at various points can be calculated before the fire.

For no other toxic material or injury-producing situation to which the fire service is subjected is such information available with so great a degree of accuracy.

For instance, at the scene of a fire involving a multi-story brick and wooden joist building, the chief is constantly faced with estimating the possibility of a collapse of the building.

If the chief is extremely conservative in estimating this problem, he will pull his men out too fast and will lose too many buildings.

If he is not conservative enough in estimating the situation, he will probably have serious accidents and loss of life of the men under him.

The fire chief must make this analysis on the spur of the moment, without any information other than that which he can gain from his own eyesight and hearing and the reports of his aides.

Inverse square law. In all calculations using this law, consider the radiation source to be a point source; that is, the size of the radiation source is small in comparison with the distances involved.

If the size of the gamma radiation source is large, as in the case of fallout, or if the gamma radiation is dispersed over a large area, as the floor of a room, the inverse square law does not give an accurate estimate until the distances under consideration are relatively large in comparison to the size of the source.

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On the fireboat *"City of Portland"*, a Rockwood FOAM system with variable automatic proportioning of the fire smothering foam liquid includes Rockwood turret nozzle convertors, hose nozzles, applicators and extensions. Pumping power supplies a continuous output of 7,000 gpm. Smaller photo shows refueling on this boat with Double Strength FOAM liquid through a trough-like funnel into a 250 gallon FOAM storage tank.

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Fireboat's FOAM system provides 3600 cubic feet of fire-smothering blanket — in 3 minutes!

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Protective advantages like these are typical of Rockwood systems and products for fire fighting vessels, vehicles or industrial hazards. Tested and Listed By Underwriters' Laboratories, Inc. For details, write to ROCKWOOD SPRINKLER COMPANY, 467 Harlow Street, Worcester 5, Massachusetts.

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KEEPING

POSTED!

Watch this space each month for late news on NSC services. Use the handy Order Form to request sample copies of publications listed in this issue or to order safety merchandise.

JANUARY 1961

Extend and promote accident prevention to your employees and their families off-the-job with . . .

home safety *Review*

A quarterly publication, HOME SAFETY REVIEW provides informative and interesting reading on subjects that cover the entire spectrum of off-job accidents. Articles on toys (teddy-bears to trampolines) . . . fire and panic . . . personal liability in accidents . . . home workshops . . . house trailer safety . . . firearms . . . and many more. Each of the four issues is illustrated with photographs and reads like any good general interest magazine. It has wide appeal to home owners, parents, people in every walk of life. Can you think of a more effective way to build family safety consciousness than through a family safety magazine?

Suppose you have 250 employees. You can send each of them HOME SAFETY REVIEW for a full year (four issues) for only 76 cents. That's the net price per subscription in that quantity to NSC members. That's little enough money to spend on a safety program effort directed at one of the most serious socio-economic problems of our time . . . a problem that has undoubtedly cost your organization many times that sum.

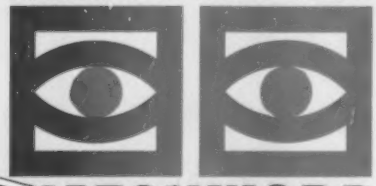
SEND FOR THIS FREE COPY OF HOME SAFETY REVIEW . . .

You'll see for yourself how readable and interesting it is. You'll also discover it's an exceptional safety aid and an outstanding buy. Use the handy fold-in order form to request your free copy and price list now.

New POSTERS

JUMBO POSTER
MARCH 1961

MAKE CAUTION YOUR



WATCHWORD

2 GOOD REASONS WHY SAFETY PAYS

SAFETY BANNER
MARCH 1961

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1810-A 8½" x 11½"

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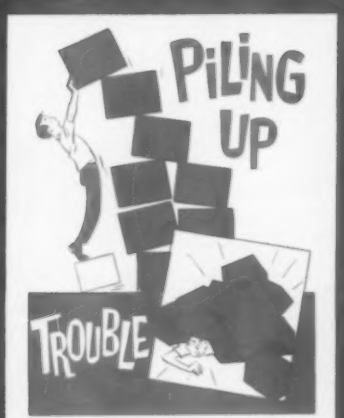
1913-B 17" x 23"

2091-B 17" x 23"



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2076-A 8½" x 11½"

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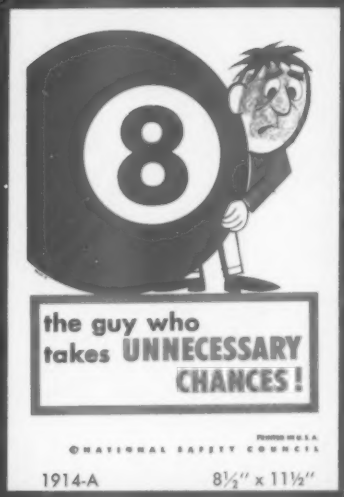
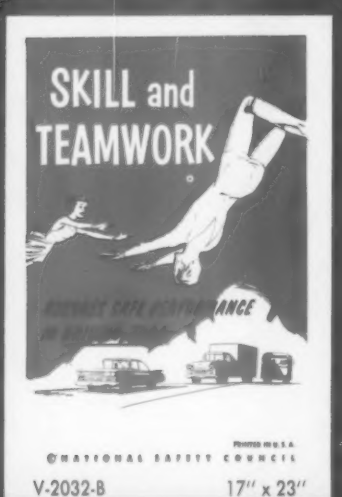


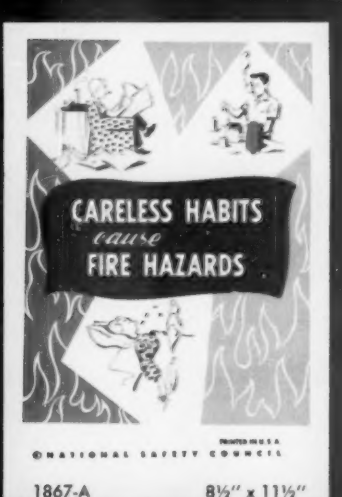
1914-A 8½" x 11½"

1866-A 8½" x 11½"



V-2032-B 17" x 23"

V-2034-A 8½" x 11½"



1867-A 8½" x 11½"

T-2060-B 17" x 23"

T-2058-C 25" x 38"
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SEND FOR FREE SAMPLE COPIES

EMPLOYEE TRAINING

BOOKLETS

Employee education booklets are a basic part of your safety program. Several recent booklets are described below. Sample copies of these booklets may be obtained by circling the code number on the order form or they can be ordered in quantity for prices shown.

CCIDENTS IN THE OFFICE

rightly colored and presented in an eye-appealing way, this w booklet will help alert your "white collar" staff to the mmon hazards found in their occupational environment. Accidents in the Office" fills a long-felt need. Eight pages, ¼" x 8". Two-color illustrations.

OCK NO. 195.50—Cost per booklet: 50—$.06; 500—$.05; 1000 $.045; 5000—$.043; 10,000—$.042; 20,000—$.04.

E A WINTER WINNER

new 16-page booklet, printed in attractive two colors, dis- sses winter driving hazards. Explains how to drive safely in ite of such hazards as determined in the most recent tests nducted by the National Safety Council's Committee on inter Driving Hazards.

OCK NO. 399.59—Cost per booklet: 50—$.065; 500—$.055; 00—$.050; 5,000—$.040; 10,000—$.037; 20,000—$.035.

EEP ROLLING WITH SAFETY IN WINTER WEATHER

ecial edition of the winter driving hazards booklet for tractor- iler and other commercial vehicle drivers, discusses technical oblems of the professional driver of heavy equipment. Many arts and schematic drawings. Sixteen pages, 5½" x 8½", o color.

OCK NO. 399.58—Cost per booklet: 10—$.17; 50—$.10; 500— 85; 1,000—$.075; 5,000—$.065; 10,000—$.06.

AT BELTS SAVE LIVES

is booklet tells the seat belt story, simply, clearly and con- ncingly. 8 pages, attractively illustrated, it should appeal to e better judgment of motor vehicle drivers who want to prove their chances of surviving accident crashes.

OCK No. 399.31 — Cost per booklet (minimum order 50 pies): 50—$.06; 500—$.05; 1,000—$.045; 5,000—$.04; 10,000 $.035; 20,000 — $.032; 50,000—$.029; 100,000—$.026; 500,000 $.023; 1,000,000—$.021.

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colorful 12 page booklet that uses cartoons to point out the lue of company safety programs. Can be effectively used to ild proper employee attitudes on safety.

OCK No. 192.16 — Cost per booklet (minimum order 50 pies): 50—$.09; 500—$.08; 1,000—$.07; 5,000—$.063; 10,000 $.058; 20,000—$.055.

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☐ Please send descriptive brochure (MS 292) and prices on new improved DASH CARDS for 1961

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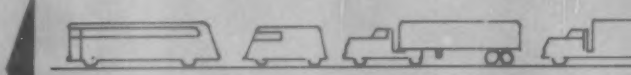

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They're faster than conventional buttons and buttonholes, and safer. A second often means the difference between injury and safety—and GRIPPER Snap Fasteners can supply that necessary margin of time. There's no drawn-out fumbling with hard-to-handle buttons and buttonholes. When work clothes have GRIPPER Snap Fasteners they come open—and off fast! For safety's sake, it pays to specify GRIPPER Snap Fasteners for your employees use. There are other reasons, too. GRIPPER Snap Fasteners are rust-proof and laundry-proof—will last the life of the garment they're on. And they keep garments neater . . . present a far smoother appearance! Phone your local industrial launderer soon—and ask about GRIPPER Snap Fasteners! Ask too, about special GRIPPER Snap Fastener tags supplied with every garment. They spell out the safety advantages of GRIPPER Snap Fasteners—help make your employees safety conscious! A product of **SCOVILL** Manufacturing Company, Waterbury 20, Conn. Also makers of GRIPPER Zippers.

GRIPPER® BRAND *Snap Fasteners . . . for safer work clothes!*

Killing blow! It takes only minutes for fire to burn your business to a crisp. Guard against the danger of a crippling flammable-liquid fire (as in the spray booth above) with a *fully automatic* Kidde carbon dioxide extinguishing system. Approved by U.L. and F.M., Kidde systems smother flammable-liquid and electrical fires in seconds, leave no mess, turn off power and sound alarms... get you back in production fast. Kidde's 35 years of experience can help you protect any hazard. Write Kidde today and find out how.

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Consultation Corner

By L. C. SMITH

Industrial Department, NSC

Dermatitis From Sodium Dichromate

Question: We are considering using sodium dichromate as a corrosion inhibitor in the cooling systems of our diesel units at a ratio of 500 to 1000 parts per million. Do you have any information on the toxicity of such solutions?

Answer: The addition of sodium dichromate to the water of the cooling systems of diesel locomotives has been responsible for considerable dermatitis among railroad shop employees.

Contact of chromate solutions with the skin may lead to dermatitis characterized by a sudden onset of marked edema. When chromates enter the injured skin, ulcers may be formed. The chromate ulcers have a characteristic punched-out appearance and a tendency to heal slowly.

Harmful effects from this corrosion inhibitor can be prevented by observing good standards of personal hygiene and wearing personal protective equipment. Gloves should be furnished to employees likely to have contact with chromate solutions. These workers should wash their skin promptly after contact with such solutions.

They should wash their hands and face before lunch and take a shower at the end of the work day. Individual towels should be provided. Contaminated gloves should be discarded. Employees should be instructed to have their working garments laundered frequently enough to avoid wearing contaminated clothes.

If there is a possibility of the chromate solution coming in contact with the eyes, chemical safety goggles should be worn. Individuals with skin allergies or chronic eye conditions should not be exposed to mist of chromate solution.

Hearing Requirements for Industrial Truck Operators

Question: Do you have any information on minimum hearing standards for industrial truck operators?

Answer: In the American Standard *Safety Code for Powered Industrial Trucks, ASA B56.1, 1959,* appears this statement:

"No one shall operate a powered industrial truck unless physically and mentally qualified by an examining physician. Examinations should be made on an annual basis for the utmost effectiveness. The operator must be capable of reading posted instructions."

One company has these stipulations written into requirements:

"Defective hearing allowed with or without a hearing aid, if acute for ordinary conversation."

To accurately test a person's hearing, an audiometer should be used under the supervision of a trained person. With the audiogram (chart) it can be determined if the person has the ability to hear normal conversational tones and has normal hearing relative to his age group.

Discoloration of Saw Blades

Question: Some of our circular saw blades have three or four permanently discolored spots the size of a quarter on both sides of the blade. Is there potential hazard here?

Answer: The discolored spots on a circular saw blade indicate the blade has lost some of its temper. Naturally, this means the steel has become softer. Such spots are usually caused by binding, imperfect alignments of the fence, or a dull blade.

These conditions should be corrected to prevent further discoloring and loss of temper. You sometimes run into a problem when sharpening such blades, if discoloration has affected the teeth, since the teeth will not stay sharp.

These small spots would not constitute a hazard, but it would be a good idea to check the cause immediately. Also, check these areas carefully to make certain no cracks have developed.

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Circle Item No. 41—Reader Service Card

Safety by Separation at New Orleans Airport

A plan whereby New Orleans area airports perform separate functions has been cited as a major safety factor by Gerald J. Gallinghouse, president of the Orleans Levee Board.

The board, operator of the New Orleans Airport, has been working with operators of other area air facilities to improve air safety through specialization of activities by each airport.

The geographic location of the three major air fields in the area permits a separation of air traffic into kinds of operation, contributing to safer and more efficient utilization of air space. This allows more efficient establishment of ground facilities, Gallinghouse said.

He added: "It has been demonstrated that this separation system is one of the best ways to guarantee maximum safety."

Circle Item No. 42—Reader Service Card

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. . . with ACROFLEX, the PLIABLE, NOTCHED STEEL STRAPPING

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Calendar Contest For October

Fond parents are Mable and Ray—
Let Sonny Boy have his own way.
Sonny's cute and he's frisky,
But he does things too risky

Miss Elizabeth Draper (individual member), Austin, Tex., won the $100 first prize in the National Safety Council's Safety Limerick contest for October with this final line:

"'DON'TING' parents are wiser than they."

The monthly contest appears on the back pages of the Council's calendar. Theme for the October contest was "Take Time."

Second prize of $50 went to Bernard Foley, Standard Engineering Co., Washington, D. C. His entry was:

"Teach your own, 'fore they're grown, risks don't pay."

Mrs. Maurice Coleman (individual member), Albany, Ga., won the third prize of $25 for this suggestion:

"RELATIONSLIP shows in his play."

The 30 winners of $5 prizes are:

Mrs. Paul W. Ownby (individual member), Salt Lake City, Utah.

Michael Frawley, Sealright-Oswego Falls Corp., Fulton, N.Y.

Mrs. Andrew N. Gonzales (individual member), Pueblo, Colo.

Richard L. Kirwan (individual member), Kansas City, Mo.

J. R. Allen, Atlantic Coast Line R.R. Co., Orlando, Fla.

Dennis L. Wehde, American Brake Shoe Co., Newark, Del.

Craig White, Illinois Central Railroad, Paducah, Ky.

Mrs. Joy Allard, Trinity University, San Antonio, Tex.

Mrs. H. D. Smith (individual member), Utica, N.Y.

Miss Jewell Metz (individual member), Griggsville, Ill.

Mrs. George McGraw (individual member), Kansas City, Mo.

Mrs. H. L. Parks (individual member), Pasadena, Calif.

Mrs. Ruth Gray, Westbrook Publishing Co., Philadelphia, Pa.

Mrs. H. W. Easley, Chevrolet Motor Sales, Leeds, Mo.

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R. L. Mason, Packaging Corp. of America, Rittman, Ohio.

Mrs. Joseph H. Lacey (individual member), West Chester, Pa.

Mrs. Marjorie Everitt (individual member), San Jose, Calif.

Mrs. Ray Mellies, Shell Oil Co., Woodriver, Ill.

Sylvester Hosman, New England Electric System, Salem, Mass.

Mrs. Harriet Messer, Beloit Iron Works, Beloit, Wis.

Marlin J. Shorts, Metropolitan Edison Co., York Haven, Pa.

Margaret E. Fish, Cheney Brothers, Inc., Manchester, Conn.

Miss Catherin Coonse, P. R. Mallory Co., Indianapolis, Ind.

Mrs. Frances Fay (individual member), Warren, R. I.

Mrs. Kenneth Zeller, Consumers Cooperative, Kansas City, Mo.

Miss Harriet Reagh (individual member), Los Angeles, Calif.

Mrs. Emma Karchnak, Bethlehem Steel Co., Johnstown, Pa.

Earle F. Baker, Continental Steel Corp., Kokomo, Ind.

Mrs. Harold E. O'Brien (individual member), Larkspur, Calif.

Hazardous Humor

That good old sense of humor is an asset, but when it wanders from the path of *good* sense it can be one of the deadliest hazards.

Every year hundreds of accidents are caused by well-intentioned but misdirected horseplay. Here are several cases which point out the dangers run by pranksters.

1. A mechanic who boasted his strength decided to prove it by preventing a pneumatic grease gun from operating with the palm of his hand. Placing his hand over the nozzle, he pulled the trigger. RESULT: The high pressure gun blasted grease deep into the flesh. Even deep therapy has failed to restore use of the hand.

2. Two men in a food-processing plant carried on a running exchange of practical jokes. When one entered a huge mixer containing giant rotating blades, his pal decided to scare him by jogging the machine for just a second. RESULT: The man inside died of severe lacerations.

3. A worker playfully jabbed a stock room clerk in the ribs. A retaliatory "make believe" left hook missed the offender and struck a bystander. The third party's hearing aid was forced into the ear. RESULT: After three operations, the damaged side of the victim's face is still paralyzed.

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Film Contest Opens

Entries are being received for the 1961 contest of the National Committee on Films for Safety in the fields of occupational, home, traffic and transportation, and general safety.

This 18th annual competition is for motion pictures and sound-slide films produced or released during 1960. Deadline for receipt of entries is February 27, 1961.

There is no charge for entering the contest, nor for awards to winning film sponsors. For entry blanks and other information, write to William Englander, secretary, National Committee on Films for Safety, 5th floor, 425 N. Michigan Ave., Chicago 11.

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Design It Right . . . Build Safety In

—From page 27

imposed by shock and vibration.

Setscrews are not a satisfactory substitute for proper pinning of gears and collars on shafts. Setscrews are properly used prior to the pinning operation, but assemblers and inspectors must be fully aware of the importance of removing setscrews after pinning.

Structural stiffness must be sufficient to prevent resonance within vibration test frequencies.

Although the foregoing considerations tend to increase over-all unit weight, careful design can eliminate excessive heaviness in areas such as base castings, unnecessary enclosures on subassemblies, solid plates and braces and selection of purchase parts.

Mounting. Hinged or sliding units must be provided with positive locks or stops to keep them in the open and closed positions. Be sure to set up hinged lids and covers so they cannot fall shut during maintenance; or provide bracing to accomplish this.

Slide-out drawer-type units require guide pins of high strength, combined with steel inserts in the mating parts. Slides must have minimum play.

Units requiring precise alignment must be provided with guide pins. These are especially important on shock-mounted equipment.

Avoid excessive use of shock mountings. In many cases, direct mounting with shockproof components will serve.

Where shock mounts are required, consult the manufacturer to determine optimum type and locations.

Check installation and removal procedures before specifying shock mounts. Requirements for servicing may not be compatible with methods used by the manufacturer.

Sufficient clearance between parts is a *must* during shock conditions, as is adequate wiring support.

Electrical components often exceed the size which can be safely left unsupported. Never rely on solder alone as a mechanical con-

nection. Small items, such as resistors and capacitors, are supported by their own leads, not by solder.

Terminal boards, printed circuits and harness supports associated with electrical items must be designed as load-bearing entities, not merely for their electrical function.

Relays must be selected to fit shock and vibration specifications to prevent contact chatter under these conditions.

A large number of tube clamps now in use are ineffective under severe conditions. They must be investigated for holding power, fatigue strength, and heat-sink effect.

Assemblies. Proper inspection of installation and assembly is vital.

Cables and harnesses in slide-out and hinged construction require careful consideration for length, serviceability, and protection.

Cables and wires passing through metal walls require adequate protection. Grommets are not always sufficient, and supports may be necessary to prevent destructive whipping.

Consult standards on coatings and finishes before specifying them. Poor finishes are often the result of improper preparation of the base material or lack of consideration of possible varieties of base materials receiving the same final finish.

Proper gasketing is best achieved by close conformity to gasket manufacturers' recommendations. "O" rings are very sensitive to improper application and can extrude through extremely thin openings.

Ventilation or other provision for heat dissipation is of prime importance in operation of electronic equipment. Units not sealed should be well louvered to permit circulation of cooling air. Blowers may be required to increase the flow.

The foregoing considerations are a guide for the designer, serving to remind him of methods to be followed and to present ideas for inclusion in new approaches.

No design effort is complete if applicable items have been ignored, nor is a new design investigation thorough if conducted without first studying basic considerations. As the design progresses, basic information should be referred to for confirmation and checking.

III. Power Transmission.

This standard presents safety considerations for the design of power-transmitting mechanisms, such as gears, belts, pulleys, shafts, couplings, keys, and related items.

Gearing. Gearing which must be run by hand during testing or adjustment can be badly damaged by screwdrivers or machinists' scales. Means of safely turning gears should be provided in each train. At worst, smooth, fairly soft pushers can be used. Turning gear trains with the fingers is one of the fastest ways of fouling the teeth and starting corrosion. Technicians also should be discouraged from backdriving trains.

Open gear trains can be fouled by foreign matter falling from other parts in the system during installation and maintenance, or from attrition. Units are sealed in to prevent entry of foreign matter. Protection for delicate gearing requires that

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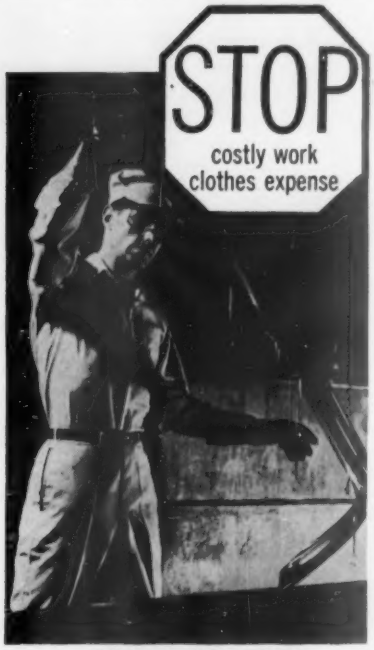

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debris be prevented from forming inside the unit.

Pinned gears, once removed, must not be reassembled to the shaft if the original hole in the shaft or cross drilling is required. Try to use a new shaft or a new position on the old shaft. Using the same pinning hole decreases accuracy or requires reaming, which weakens the shaft.

If pinning cannot be used and setscrews are required, prevent the screw from coming out during the operation. Various locking methods are available for this purpose, among them plastic inserts, peening or staking, or externally applied liquid sealants.

Belts and pulleys. High-speed belting is often built up on steel or nylon cables. These cables can be exposed or released by badly worn belts and may cause severe damage to adjacent apparatus. Belt tension is the indicator of trouble.

Covers should be installed over exposed portions, and inspection and adjustment ports must be provided in them. Accurate means of judging tension are a vital part of maintenance procedures. The simplest way is the common method of relating tension to the available slack at the point midway between the two pulleys furthest apart. This also holds true for link belts and chains.

Shafts, couplings, and keys. Shafts must be designed with sufficient torsional rigidity to withstand predictable load conditions. Do not design for minimum shafting and then add grooves for retainers or holes for pins. Safe shaft design must take into account all reductions in effective shaft cross-sectional area.

Shafting must be rigid enough to prevent whipping during shock and vibration. Long shafts can be tubular or can have hangers spaced where needed to ensure rigidity.

Where mechanical power transmission is limited by pins, washerpiles, or other positive stops, provide slip clutches or shear pins as "weak links" to prevent damage to rotating components.

High-pressure pneumatic or hydraulic lines must be supported against vibration and shock. Avoid sharp bend radii, and use grommets and brackets where lines must

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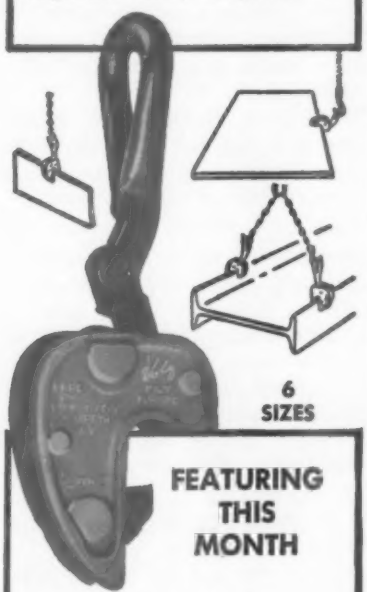

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pass through panels or bulkheads.

Bearing and bushings. If lubrication is required, provide external lubricating points or oil holes. Otherwise, use impregnated bushings, sealed permanently-lubricated bearings, or dry bearings. The latter two types are preferred for electronic equipment.

Clips and shields should not be tampered with under normal conditions. Should this be necessary, use extreme care in reassembling the bearing. Avoid modification.

Controls. Safe control functions can be impaired by remote controls operating through long flexible shafts for rotational or push-pull actions. These are not positive in action, wear rapidly, and are sensitive to shock and vibration. Substitute other methods of control (in itself a form of power transmission) suggested in the preceding sections of this standard.

Hydraulic control devices in slewing and other tracking or positioning operations are often called on for smooth, fast control action while being capable of accurate inching. For this function, the common method is multi-rotational crank-handwheel combination. Such controls must be carefully engineered to satisfy both conditions.

Dwarfing the crank handle in favor of the wheel or knob seriously impairs cranking efficiency and tends to cause manual "stumbling." This last must be avoided; it results in cessation of rotation, or worse, complete reversal of the cranking action for half a turn or more.

External controls are subject to the same design considerations for safety as are other portions of equipment. Such items as setscrews, pins, electric shock, bushings, keys, and shields are as important to external controls as they are inside the unit.

Proper application of basic design considerations to power transmission is especially important in complex computing mechanisms where compactness increases the amount of possible damage.

To minimize damage, fail-safe devices are desirable. Fail safety in power transmission is accomplished by slip clutches, shear pins, or any method which localizes and contains failures to the primary source of

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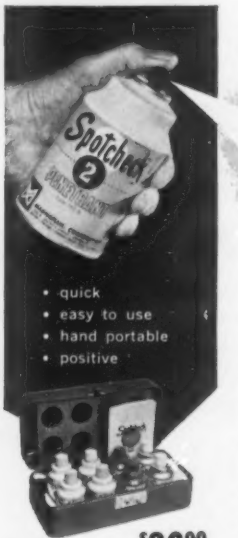

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trouble. In addition, operating conditions can be indicated by reference marks, dials, flags, lights, or other displays. Attention to such details will result in safe and reliable electronic equipment.

IV. Electromechanical.

This standard presents general electromechanical design considerations, with specific emphasis on personnel safety.

General. Personnel safety may be subdivided as follows:

1. Protecting the equipment from the operator.
2. Protecting the operator from the equipment.

Coding is accomplished by location, shape, size, labeling, color, and symbols,

Location. Controls and indicators near opening areas should be guarded or recessed to prevent accidental contact with the operator's body or his tools. Orientation can also prevent accidental actuation.

Group functionally similar operations.

Place sequential operations in logical order.

Arrange controls to anticipate desired patterns of visual display.

Shape can be used to indicate function or direction of control or display desired.

Shape control knobs to provide optimum gripping surface. Use knurling for fine tuning and heavy serrations for coarse adjustments.

Switching levers and bars can be shaped to show normal operating position and can be pointed to indicate scale reading at a glance.

Electrical power plugs should clearly indicate, by shape of prongs or keys, the receptacles intended to receive them or the direction of insertion.

Size. Do not cramp numbering and lettering. Use available space.

Provide displays large enough to ensure observation of unusual or improper conditions.

Use small knobs for noncritical adjustments, or for switching controls utilizing mechanical detents. Large knobs are suitable for tuning and other delicate adjustments. Fine adjustment controls should be considerably larger than their ac-

companying coarse adjustments. Rotary controls can be ganged, pyramid fashion, only if there is sufficient difference in size between adjacent knobs.

Displays can be coded by size, making the display most used larger than the others to focus attention on it. Emphasize major items of a panel by increasing the size of the indicating face or positioning scale, where space permits.

Labeling. Indicate auxiliary equipment or tools required.

Use labeling for warning.

Use labeling wherever possible to clearly indicate function or association. Avoid unspecific labels.

Conspicuous labels should highlight such devices as tubes, emergency cutoffs, and high-voltage sources.

Uncommon means of control, display, or connection should be labeled clearly and briefly to avoid misuse.

Color and symbols. Certain colors are almost universal in meaning:

Red—Danger, Stop, Fire.
Yellow—Caution, Slow, Warning.
Green—Go, Clear, Safety.

Colored symbols are also familiar:

Red cross for medical help.
Green cross for safety.
Black and yellow stripes for danger.
Twin white lines forbidding crossing.
The radiation symbol.

Effective symbolism is generally confined to warning signs and directional markings.

Color coding is best used to indicate association between controls and displays to indicate direction or to focus attention, as by warning lights. Color often is more effective when used in combination with other means of coding.

Do not rely on color for warnings. Adequate labels must be provided for all warning signals. Signal lights should be restricted to colors, especially to red, green, and blue.

Shielding and packaging. When screwdriver adjustments are required in the vicinity of high voltage, insulated guides or tubes should be placed to prevent accidental contact.

Cathode-ray tubes, especially those used in portable equipment or for direct plotting, should be shield-

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Take the hazard out of Floor Maintenance

WITH HOLT EXPLOSION PROOF COMMANDER

Model EPC16D, showing handle in space-saving stowaway position.

Holt Commander is designed expressly for safe maintenance of floors in oil refineries, atomic research plants, powder factories, and other hazardous industries. There's no outside wiring. Entire unit, from brush to handgrip, is constructed, sealed and safety-tested to prevent sparks and static that might ignite gas, dust, fumes or vapors. Static eliminator wire in brush, a Holt exclusive, even prevents shocks to operator.

With this one machine and Holt Quick-Change Attachments you do a complete floor maintenance job — polish, wax, buff, scrub, etc. Dual handles give operator better control; reduce fatigue. Made in 16 and 20" sizes. For full story write now to Dept. W-1.

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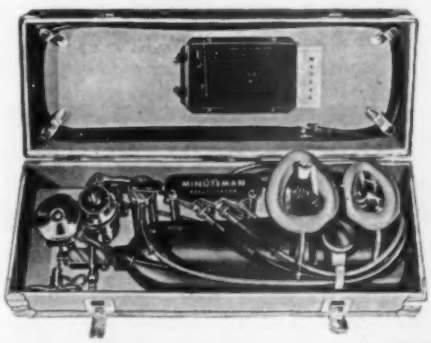
The STEPHENSON MINUTEMAN

prevents emergencies from becoming tragedies



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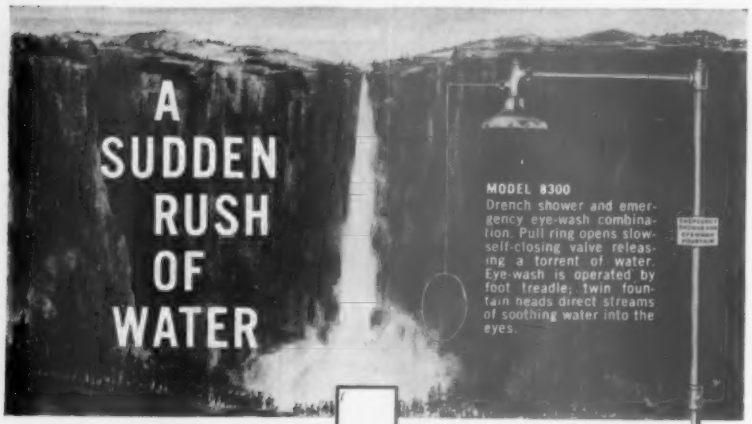
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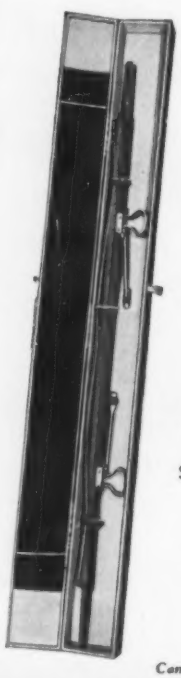

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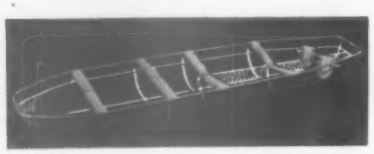

Rigid construction. Patients may be carried vertically or horizontally, greatly reducing danger of moving from inaccessible locations. Canvas web-straps at chest, abdomen, thigh and calf, hold patient securely.

Send for descriptive literature.

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ed to prevent impact and implosion. Armor glass is often used for this purpose.

Prevent electrical shock and shorts by proper insulating and spacing. Use interlocks to open circuits which might endanger maintenance personnel working through accesses.

Mechanical assemblies with moving gears and levers should be covered or shielded to keep out debris left during construction or caused by aging and vibration. Never permit maintenance personnel to work close to moving parts.

Portable equipment should be light and compact. Units carried from one operation to another should not weigh more than 25-30 lbs. and should have carrying straps or handles. Such units should have rounded edges and corners.

Portable units suffer great shock loads in everyday use. Minimize components susceptible to shock or use a shock-absorbing case.

Error- and accident-prone situations. Many situations confront the operator or service man with problems too numerous or closely timed for adequate solution. When the stress of such a situation causes the operator to err in judgment or action, the situation is known as error-prone. Similarly, dangerous conditions leading to accidents are called accident-prone situations. Since conditions for these phenomena are built in, they should be recognized and avoided.

Error-prone situations. Too much information to be handled by one operator usually prevents proper reaction to individual bits of information. The operator loses the unused bits while trying to use the most prominent.

Too rapid a flow of sequential material produces the same results. While trying to remember the first few bits, the whole picture is distorted or lost.

Too many functions required for action from any amount of information also confuses.

Emergency controls are error-prone, if combined or associated with regular controls. Detents, shift locks, or frictional resistance can offset panic reactions.

Accident-prone situations. Controls spaced too far from the oper-

ator's normal position cause the operator to over-reach. This is dangerous if the action requires much exertion.

Exposed wiring and terminals near operating positions or tool accesses invite shocks.

Unprotected gearing or reciprocating devices are a potential hazard. As with electrical hazards, familiarity breeds contempt for obvious dangers.

Proper holding devices or fixtures are vital safety tools. Technicians balancing bulky assemblies in their laps cannot be expected to operate safely or efficiently.

Materials with low flash or melting points must be kept away from soldered connections.

Adequate access is a definite safety factor. Cramped quarters are not conducive to accurate adjustment or delicate manipulation. This applies to tools and auxiliary equipment as well as to hands and vision.

V. Electrical and Electronic

This standard is a guide for the design of safe electrical and electronic equipment. Included are prevention of electrical shocks, shorts and arcing, grounding techniques, fail-safe operation, and prevention of electronic interference.

Safety measures may be applied effectively in three areas: design, installation, and operation. Concentration of precautionary steps in only one area imposes additional responsibility in each of the other two and jeopardizes life and property.

Operating safety. Electric shock and fire are the principal hazards. The first is dangerous to personnel only; the second to personnel, equipment, and surroundings. The causes often are related and sometimes are identical.

Varied attitudes exist toward potential dangers of electronic equipment. In general, the tendency is to pay little attention to such matters when apparatus is manned by skilled persons. Unfortunately, it sometimes takes a fatal shock or a destructive fire, either of which can be caused by skilled but inattentive persons, to point up need for more attention in this direction. The laboratory should be no more hazardous

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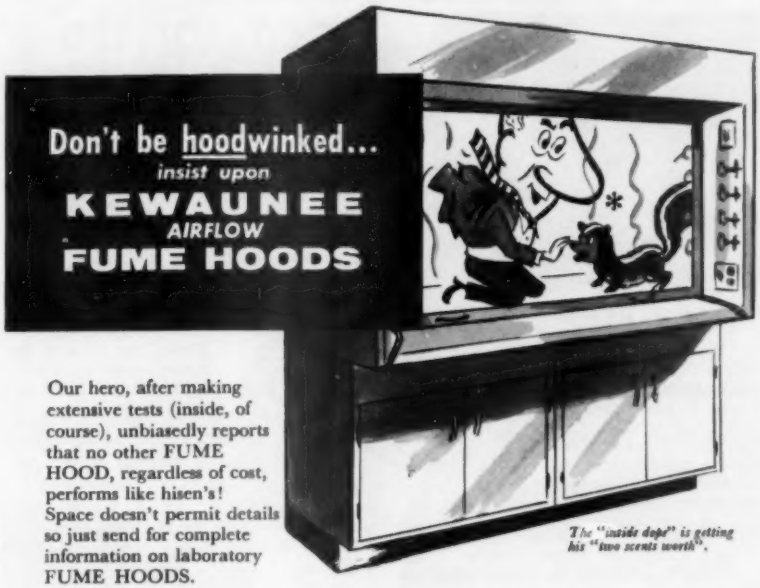

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Featuring rugged steel-clad construction, attractive finishes and low cost, these booths are ideal for *factories, public buildings, terminals, schools, laboratories, restaurants, stores* and for all noisy locations. IAC "NOISHIELD" booths are also available in floor models.

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than the assembly line test position.

Designing for safety. Safety devices and circuit arrangements can be included in electronic equipment at the design and construction stages. It is well to survey common devices of this sort, with a view to including them in electronic products.

Interlock switch. This is one of the oldest electrical safety devices but strangely is one of the least used in modern equipment. Ordinarily it is wired in series with one or both of the power-line leads to the electronic power supply unit and is installed on the lid, cover or door of the enclosure to break the circuit when the enclosure is entered. A true interlock switch is automatic.

Multiple interlock switches, wired in series, may be used for increased safety. One switch may be installed on the access door of a transmitter and another on the dust cover of the power supply section.

Complex interlock systems are provided when separate circuits should be opened for safety. An example is the use of separate open-up switches for the a.c. power line and the high-voltage d.c. output of a power supply.

Since electronic equipment often must be serviced "hot," interlock switches must be operable by responsible personnel when access doors are open. They should always be located in such a manner as to make closure difficult, and therefore attention-catching.

Interlock switches can be used to advantage on transmitters, oscilloscopes, high-voltage power supplies, photoflash equipment, precipitators, and TV receivers.

Bleeder resistors. A bleeder resistor is connected permanently across the output terminals of a high-voltage d.c. power supply. Its purpose is to bleed off automatically the dangerous charges built up on the filter capacitors.

No medium- or high-voltage power supply should be constructed without a bleeder, since high-grade filter capacitors can store murderous charges for long periods. The bleeder resistance must be the lowest value which can discharge the capacitors quickly without excessive loading, after the power has been switched off.

In power equipment, the resistor

is chosen to give a discharge time constant of 1 minute. The bleeder current is an additional load on the power supply, but the system should be designed with this slight additional burden in mind.

Current-limiting resistor. This is an inexpensive device in a high-voltage power supply. It should be incorporated in every supply from which potential only, or small currents, will be required. Such a resistor is connected in series with the output and limits the current to a safe value during short circuit or accidental contact. A familiar example is the high resistance (usually 1 megohm) series resistor in the rf-type d.c. kilovolt power supplies.

Capacitor-shorting devices. In some equipment (e.g. high-voltage radar apparatus) where large high-voltage capacitors must be operated without adequate bleeding, the operator must discharge these capacitors before working on the high-voltage circuits.

For this purpose, metallic grounding or shorting rods with insulating handles should be chained inside the equipment within easy reach of the operator. Short-circuiting rods, wands, or bars should be insulated beyond the voltage they should handle and should be nonremovable from the equipment.

Note: Do not discharge high-voltage capacitors with a low-resistance bar. A large resistor of 200-watt, 10,000-ohm rating should be used.

Meter protection. Old-style panel meters having metallic zero-set screws should be avoided in electronic equipment. Such setscrews run "hot" in high-voltage circuits and constitute shock and fire hazards.

Metal-case meters should be used only on grounded metal panels or chassis. In the event of internal ground or short circuit, such instruments have high potential on their cases and flanges.

For maximum safety, meters in high-voltage circuits should be mounted behind a window of glass or thick plastic.

A.C.-D.C. circuitry. Whenever possible, transformer-isolated power supplies should be used in preference to transformerless (a.c.-d.c.) circuits. Although the line-operated supply is simple and compact and furnishes sufficient power for many applications, its negative return is

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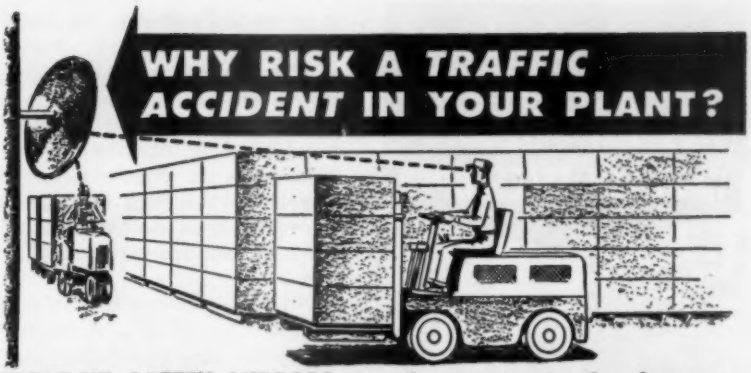

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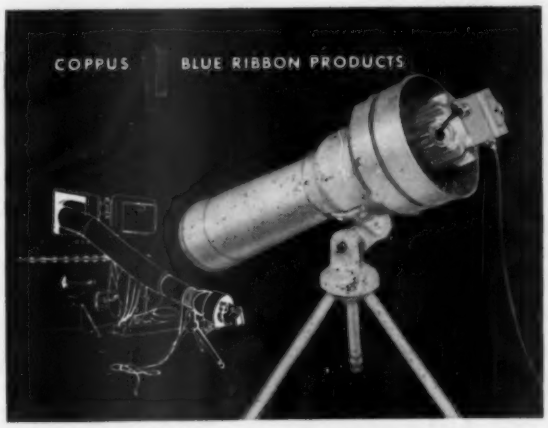

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at power-line potential and dangerous.

Where there is no choice, design the circuit so no connections are made directly to the chassis or metal panel. If the chassis must be included in the circuit, mount the completed equipment in a case or cabinet made of insulating material. Use only insulated knobs, dials, and switches.

It is good practice also to polarize the power plug of a line-operated power supply so circuit returns will be connected to the grounded side of the power line.

Insulated controls. Use metallic knobs, dials, switches, and levers only in "cold-chassis"-type equipment. Never use such attachments with a.c.-d.c. devices

As an added precaution use short setscrews in insulated knobs, so the operator's fingers will not normally touch the tops of these screws. When this isn't possible, cover the top of each screw with a spot of sealing wax or coil dope after tightening.

Shafts of rheostats and potentiometers in high-voltage circuits should not be brought out directly to knobs or dials. They should be recessed far enough back of the panel or below the chassis to include an insulated shaft coupling and an ample length of insulated rod. Examples of high-voltage components of this type are the intensity, focus, and beam-centering controls of an oscilloscope.

High-voltage jacks. Jacks are occasionally used in power circuits for insertion of meters, keys, and output lines. Good practice is to connect such jacks in the grounded B-minus leg of the monitored circuit, rather than at any point in the B-plus sections.

When this method of connection is not practicable in a particular circuit, jacks should be recessed behind the main panel where they cannot be touched easily and clearance holes provided for insertion of the plugs. This will prevent accidental contact by the operator, and accidental grounding and firing as a result of contact with wires or other metallic objects.

Switch firing. Electronic circuits should be designed to minimize sparking, arcing, and firing in switches, relays, and similar make-

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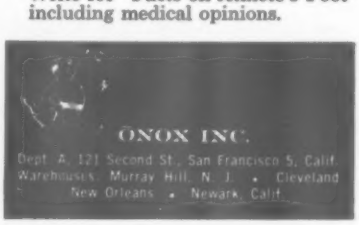

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CUTS AND CHEMICAL BURNS ON ARMS AND BODY!

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and-break devices. Finished equipment must be inspected fully for verification of the design. In addition to shortening the life of the switching device, firing can create a fire hazard.

Only explosionproof switching devices should be used when electrical equipment is to be used in an atmosphere of explosive gas or vapor.

Mercury switches and other mercury-containing devices must be adequately protected against breakage of glass containers. An additional precaution is to mount a mercury switch in such a location in the equipment that the mercury will not spill on a hot surface if the container should break. Mercury vapor is a pronounced health hazard, in addition to the electrical mischief which might be caused by liquid metal on the loose.

Power-line safety. Engineers and designers are inclined to confine safety considerations to high-voltage apparatus. It is important to note that considerable hazard lies in the power-line end of electronic equipment. Fires, shock, and serious burns result from personal contact, short circuit, and grounding at the a.c. line. The danger is heightened when the supply is 220 or 440 volts.

Only line cords bearing Underwriters' Laboratories approval and in good physical condition should be used. Such cords must pass through grommet-lined holes in chassis or panels, never through raw-edged metal.

Three-conductor cords should be used wherever facilities are available for the third wire as an equipment ground.

Adequate fusing of equipment should be provided. It is negligent to assemble complete radio or electronic apparatus without including one or more fuses in the equipment.

Positioning of high-potential components. Each component with exposed terminals in medium or high-voltage portions of a circuit should be protected from short circuit, grounding, or accidental contact by the operator.

Such parts include selenium rectifiers, bleeder resistors, capacitors with exposed terminals, switches, rheostats, and 115-volt pilot lights. Whenever possible, such compo-

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nents should be mounted under the chassis where they are not exposed.

Ventilation requirements do not always permit this. When it isn't practical to conceal components below the chassis, protective housings with ventilating holes or louvers should be provided. When housings cannot be used, exposed terminals of components should be oriented away from the direction of easy contact.

Installation measures. Permanent electronic equipment, whether in a laboratory or in a nontechnical environment, should be installed in strict accordance with the Electrical Code and any applicable fire department rules and regulations applied to wiring.

Pitfalls to be avoided include: dangling, trailing, draped, or frayed power cords; overloaded power outlets; overheated or damp locations; overloaded power switches; infused power lines or lack of circuit breakers; and use of multiple attachments (cube taps).

Provide a safety ground at every installation. This consists of connecting with a heavy wire all metal panels, chassis, racks, and cabinets, and running this wire directly to a good ground.

In most cases, grounded electrical conduit is an adequate path to the ground. As an added guarantee, use a good earth ground consisting of a cold-water pipe, or a long pipe driven into moist soil.

Three-wire cords with the third wire connected to the electrical conduit are handy, because they connect the equipment automatically to ground when the power plug is inserted in the outlet.

In some states, three-wire power cords are mandatory in industrial installations, but the rule often is not enforced in laboratories unless there have been hazardous conditions or serious accidents. Where three-wire outlets are provided in a building, take advantage of the safety provided by replacing two-prong with three-prong plugs.

Many commercial electronic instruments have a grounding pigtail on the end of the plug. Do not clip these leads. Use them for safety grounding.

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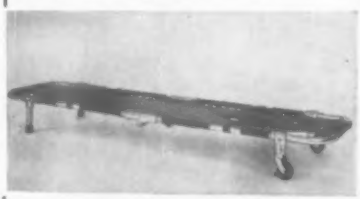

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and inside equipment at all points where an operator needs to be reminded of hazard.

Mount an approved fire extinguisher near equipment. Carbon dioxide extinguishers are desirable, since they do not cause any chemical or moisture damage.

A proposed location for stationary electronic installation should be surveyed with respect to temperature, humidity, vibration, power-line stability, magnetic fields, and traffic conditions to determine which elements should be corrected.

Failure vs. safety. Electronic equipment breaks down in spite of the best engineering and maintenance. Failure is considered as falling into two categories. When breakdown of a component causes dangerous overloads of voltage peaks or places high potentials in undesirable places, the failure is said to be unsafe. When breakdown puts the system out of operation without introducing trouble in the system or to the operator, the failure is said to be safe.

No blanket rule can be stated for all cases. A particular failure must be viewed in terms of analysis of the circuit or system in which it occurs to determine the category into which it falls.

Consider these examples: A bleeder resistor in a power supply fails unsafe because in burning open it allows a dangerous charge to be held by the filter capacitors. A short-circuited filter capacitor also fails unsafe because it draws excessive current which may destroy the rectifier, filter choke, or transformer.

An open-circuited secondary winding in a transformer in a simple power supply fails safe because it removes the power automatically from the entire system. But the secondary would fail unsafe if the power supply furnished fixed bias voltage to high-power tubes, since these tubes would draw excessive plate current in the absence of the bias.

The cautious designer of electronic equipment will take every possible precaution to favor fail-safe operation. For example, inclusion of a fuse in series with a filter capacitor will change a fail-unsafe probability into a fail-safe situation.

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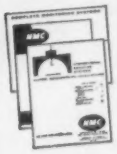

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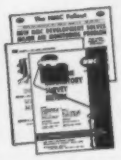

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103 Park Ave. New York 17, N. Y.

Circle Item No. 73—Reader Service Card

Yankee Salesman

—From page 23

the accident frequency rate among its 16,382 employees from 3.16 in 1958 to 1.90 in 1959.

Each of the three districts won an Award of Honor. But because the severity rate of the company as a whole increased from 669 in 1958 to 938 in 1959, the company won an Award of Merit instead of an Award of Honor. A tragic airplane accident which occurred shortly before the end of the year and took the lives of three Aramco employees was responsible for the increase in severity. The plane was one of 17 aircraft owned and operated by Aramco.

The substantial improvement made by the three Saudi Arabian districts of Aramco in 1959 over 1958, and the improved frequency rate achieved by the company as a whole, are all the more noteworthy when it is remembered that the company and the Dhahran and Ras Tanura districts won Awards of Honor in 1958, and that the Abqaiq district won an Award of Merit.

There is no mystery in the safety performance of Aramco. From the top down, the company sincerely and wholeheartedly believes in safety and insists on having it.

You don't have to talk to Norman Hardy, chairman of the Aramco board of directors, more than three minutes to find out that safety is a "must" with him. The same insistence is shown by President Thomas C. Barger, by Vice President for Industrial Relations Paul C. Arnot, by Chief Safety Engineer Charles Homewood, by Paul Pederson of the safety staff, by the managers of the three districts—Sam Carper at Ras Tanura, W. L. Crampton at Abqaiq, and N. A. Scardino at Dhahran—and, most of all, by the employees, both American and Arabian.

Inscribed in huge letters across the main gate to the Dhahran district are the words "Take Safety Home." Similar inscriptions for safety are on the gates to the other districts, and throughout the various buildings. On a huge tank out in the desert is the king-sized inscrip-

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Acid-Resistant and STATIC-FREE!
100% Dynel, Anti-Static
CHEM-WEAR
UNION MADE ®

WORK CLOTHES

Nationally famous CHEM-WEAR work clothes repel acids, caustics and stains . . . and do not support combustion. Wear safe, always comfortable CHEM-WEAR Shirts, Trousers, Coveralls, Laboratory Coats and Work Aprons.

PERMANENTLY FLAMEPROOFED Work Clothing

Protects from the danger of spot welding and light metal splash, etc.

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M. SETLOW & SON, Inc.
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With Johnson All Rubber Ankle Action Dielectric Ladder Shoes. The Choice of Ladder Climbers in all parts of the world.

WORK SAFELY ALL-WAYS

FOR EXTENSION LADDERS

Our Step Ladder Shoes are popular with maintenance men in homes, office buildings, schools, hospitals and etc. Dealers in all principal cities. Ask your Safety Supply Dealer or send direct. Your order will be shipped promptly.

FOR STEP LADDERS

Johnson Ladder Shoe Inc. Eau Claire, Wisconsin

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Circle Item No. 76—Reader Service Card

TWO MEDICALLY APPROVED HAND CREAMS FOR INDUSTRIAL WORKERS

(1) **PH7 Protective Cream** is non-greasy, non irritating and non-sensitizing to the skin.

Applied before starting work, one application is effective for three to four hours against the following irritants: Lubricating oils, cutting compounds, synthetic resins, solvents, printing inks, paint, fibre glass, iron dust and chlorinated naphthalene.

(2) **Work Cream** is a soft, white hand cream which is applied after exposure to degreasing materials and at the end of the day's work to help keep the hands in good condition. Workers using solvents and other strongly degreasing materials will find Work Cream helpful in preventing roughness, dryness, chapping and cracking of the skin.

Cap type pump dispenser available for use with one pound jar.

LESTER L. BROSSARD CO.
540 N. Michigan Ave., Chicago 11, Ill.

SLIP-ON GUARD

GETS-A-LITE GUARD and GUIDE

Quickly and Easily Installed by Anyone—No Tools Needed!

- Simply slip GETS-A-LITE GUARD AND GUIDE over the fixture, as illustrated.
- Made of indestructible spring steel wire. Nothing to break, get out of order or replace. Will last indefinitely.
- Once installed, GETS-A-LITE GUARD AND GUIDE is NEVER removed.
- Nothing to unlock, fuss with or lock, when changing lamps.
- GETS-A-LITE GUARD AND GUIDE actually steers lamp into socket enabling maintenance man to change lamp in 10 seconds!
- Available for 40 watt and 100 watt fluorescent lamps.

GETS-A-LITE CO.—Dept. NSN-161
3865 N. Milwaukee Ave., Chicago 41, Ill.

Circle Item No. 77—Reader Service Card

tion: "Safety Always—All Ways."

"It cost us a lot of money to paint that sign on that tank," commented an official of the company, "but it's worth it as a constant reminder to our people to be safe."

I had the pleasure of spending a day in each of the three districts, accompanied constantly by my host, Paul Pederson, who was stuck with me because Charlie Homewood was back home in the states on what Aramco calls "long leave"—an extended vacation that comes up every other year, with a two-week holiday in the other year.

I presented the Council's Award of Honor to District Managers Carper, Crampton, and Scardino. I presented the Award of Merit to Mr. Hardy at a meeting of the Executive Management Committee. I made half a dozen speeches (poor Paul Pederson had to listen to all of them!) and had a little time to visit with Saudi Arabian employees who are rapidly stepping up the ladder of employment status into positions of responsibility and supervision.

We left Dhahran and Saudi Arabia marveling at American ingenuity which has magically planted delightful, attractive cities in the midst of the desert—cities replete with modern markets, lush foliage, green grass, lighted tennis courts, athletic fields, schools, paved streets, all the conveniences of modern living in America or anywhere.

Aramco produces a daily newspaper in Saudi Arabia which gives big league ball scores along with TV programs and other essentials. It gets out a weekly newspaper which is brimful of features and news about Aramco employees.

"After all this," we told each other, "what is left?"

There was plenty left. We were intrigued by what we saw in brief stopovers in Bahrein, Bombay, Colombo, Singapore, Djakarta, and Darwin, Australia.

And then—Sydney.

Sydney reminded us constantly of San Francisco, with its beautiful harbor, its tremendous bridge, its brilliant foliage.

I was there primarily to speak at the second annual Road Safety Congress of the Road Safety Council of New South Wales. But I also

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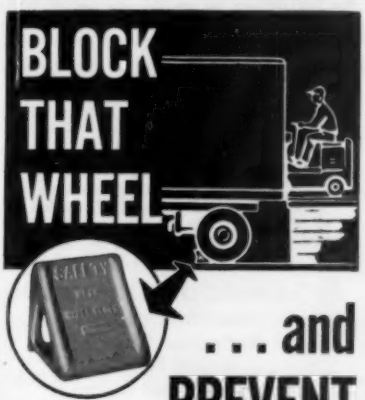
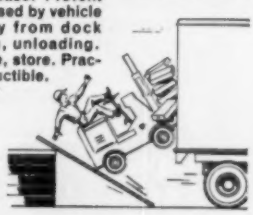
BLOCK THAT WHEEL



... and PREVENT THIS!

Safety Wheel Blocks are light, strong, tough because they're **STEEL CASTINGS.** Hold heavy trucks, trailers with ease. Prevent accidents caused by vehicle moving away from dock while loading, unloading. Easy to handle, store. Practically indestructible. Stocked for Immediate Delivery



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NEW SINGER SAFETY SHIELD

In the plant or on the job

★ LIGHTWEIGHT ★ RUST-PROOF
★ LOW COST ★ FIRE-RESISTANT
★ ASSEMBLED OR TAKEN APART IN MINUTES WITHOUT TOOLS

Just think of it—no hooks, no bolts, no screws. Ideal for welding, grinding, machining etc. or can be used straight line as a protecting divider. Rust-proof steel frame with heavy fire-resistant duck curtain—attaches in seconds with with heavy duty snap fasteners.

In 4 standard sizes:
18" x 42", 36" x 48", 36" x 60", 36" x 72"

NEW BIG CATALOG
Describes screens in detail. Complete line of work gloves, welding gloves and safety clothing.

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was given the privilege of speaking at a Sydney Rotary Club luncheon, a Legacy Club luncheon, a province-wide meeting of the Baptist Assembly, a luncheon of the Institute of Industrial Management, a dinner of the Association of Industrial Safety, a meeting of the Mutual Trades Employers' Association, and at other affairs.

We were taken on a four-day tour of Australia's great Snowy Mountain Scheme—a power and irrigation project so gigantic in size, scope, and vision that it staggers the imagination.

Best of all, we were taken into the homes of Australian people—and fell in love with all of them.

We found that Australians—and I hope they regard it as a compliment—are so much like Americans it is positively uncanny. They are warm, excessively hospitable, have a great sense of humor—and seem very fond of Americans and America. Our G.I.'s in World War II did a wonderful job of selling America to Australians.

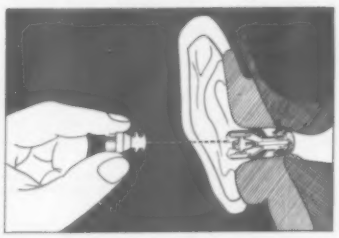
Our hosts on the Snowy Mountain tour—Dr. Frank S. Hansman, chairman of the Road Safety Congress and safety enthusiast supreme, and his wife Joyce—became friends we shall never forget. Neither shall we forget Warwick Harrison, secretary of the Road Safety Council of New South Wales, who smothered us with hospitality. Or American charge d'affairs William Beldon, or American Consul General Larry Vass. Or Premier Heffron, or Minister of Transport McMahon, or Commissioner of Transport Walsh, or Superintendent of Police Chasling, or Safety Leader Frank Delandro, or all the others who tried to kill us with kindness—a wonderful way to go!

In Honolulu we found a similar enthusiasm for safety, both industrial and public. At Bingham, secretary of the Governor's Highway Safety Committee, and John Hall, NSC field director, saw that we were alohaed in style, and arranged an impressive safety luncheon of top industrial and public figures.

We came home after 26,000 miles, 28 days and 28 speeches with one predominant thought: Safety is a great bond between nations and peoples. May it long prevail!

Circle Item No. 87—Reader Service Card

HARMFUL Effects of NOISE to The Ear Drums ELIMINATED by using *Lee Sonic* EAR-VALVS



IT TAKES ONLY 30 SECONDS TO PROVE this. We GUARANTEE IT! These are NOT EAR PLUGS! They are scientifically developed sound controls that protect the eardrums WITHOUT interfering with NORMAL CONVERSATION or HEALTHFUL AIR CIRCULATION.

PROVE-IT-YOURSELF Try a pair for 30 days with no obligation to purchase. Send for trial pair on Company Letterhead.

SIGMA ENGINEERING COMPANY
1608 Hillhurst Ave., Dept F-3,
Los Angeles 27, Cal.

Circle Item No. 82—Reader Service Card

New SAFETY EQUIPMENT

Product announcements in this section are reviewed for compliance with the advertising policy of the NATIONAL SAFETY NEWS. Inclusion should not, however, be construed as endorsement or approval by the National Safety Council.

Safety Kits Include Aerosol Burn Spray

An addition to Safety Kits for industry and business is G-63, an aerosol spray for burns.

Packaged for industry in 8-ounce spray cans, G-63 coats the skin with a protective film. G-63 contains Hexachlorophene as a guard against infection and an analgesic agent.

General Scientific Equipment Co., P.O. Box 3038, Philadelphia 50, Pa. (Item 301)

Aluminum Safety Ladder Rung

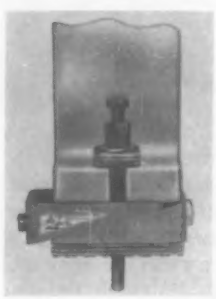
An aluminum rung for ladders incorporates a flat-round design, with carborundum grit inbedded in the flat top surface for added anti-slip safety.

The rung ends are designed so that when pressed into rails, to form a ladder, they will not turn.

A torque load of up to 1,000 inch pounds, a rail-rung bond supporting 3,000 lbs., and a center load capacity of up to 1,600 lbs. are claimed for the rung.

The rung is now standard on HIMCO fiberglass extension ladders.

Hopfeld Industrial Mfg. Co., San Rafael, California. (Item 302)



Bolt-Thru Machine Mount

Bolt Thru Wedgmount machine bases are designed for control of vibration where bolting of machines to the floor is required by safety code regulations.

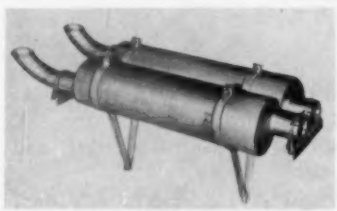
The new product has double wedge construction to facilitate leveling. Vibration reduction is claimed.

Clark, Cutler, McDermott Co., 8 West Central Street, Franklin, Mass. (Item 303)

Cuffing Material for Work Gloves

A cuffing material for work gloves, claimed to be more washable and dry cleanable, has been developed for use on all cuffed work gloves. The manufacturer states the material will withstand up to five industrial cleanings usually given to work gloves, without affecting the characteristics of the cuffing.

Reigel Textile Sales, 260 Madison Ave., New York, N. Y. (Item 304)



Muffler Kit For White Engine

A dual muffler kit for the White 3000 Series engines with 386-451 cubic inches displacement is available in the "Engine Mated Sound Sentry" line of mufflers. The manufacturer claims less back pressure, reduction in noise level, reduced exhaust temperature, and longer muffler and manifold exhaust pipe life.

The unit is of all welded steel. The ATI W-451 Dual Muffler Kit includes vertical straps, hangers, tailpipes, and necessary clamps.

Alexander Tagg Industries, Inc., Hatboro, Pa. (Item 305)

Adjustable Crown Face Shield

A new face shield, designed for safety and comfort along with easier adjustment and simpler maintenance, is equipped with interchangeable and replaceable windows, in either acetate, vinyl or brass screen mesh. High impact and fire resistant windows can be furnished. Fit-Rite headgear permits head size and crown height adjustments. Crown material of fiberglass is available in white, gray or yellow.

Flood Safety Products Co., 3035-37 West Lake Street, Chicago 12, Illinois. (Item 306)

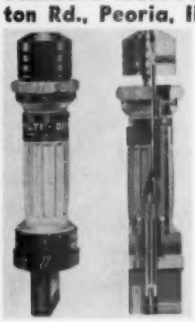
Glass Fiber Lined Smoker's Station

A new model, the 4J-R, has been added to the Sipco Dunking Station line of "safe smokers."

The unit is a permanently mounted type furnished with a glass-fiber inner liner and a type "R" rectangular sign. Available with bright or grey crinkle finishes.

Signs are made of steel, with black lettering on white background. Six different wordings are available.

Standard Industrial Products Co., 3527 Farmington Rd., Peoria, Illinois. (Item 307)



Power Fastening Tool For Dense Materials

A power tool for fastening into dense materials such as concrete, cinderblock and structural steel, the HILTI model DX 100-L, was designed to reduce ricochet, fishhooking and an explosive spall.

The tool starts the fastener in contact with the material and then pushes it in. This is accomplished by using a heavy hammer to hit the high mass steel piston which contains a light, slow burning blank charge.

Fasteners are provided assembled with washer installed. "Conic" studs and pins used with the DX 100-L are made of special alloys, rustproofed, and tapered for holding power.

Hilti, Inc., 73 Southfield Ave., Stamford, Conn. (Item 308)

Transistor Sound Level Meter

A fully transistorized, battery-operated sound-level meter weighing 4 pounds has patented, high impedence input.

The Type 1400E gives direct readings of sound-pressure levels from 24 db. to 140 db., on a 5-in. wide dial.

The meter, which conforms to A.S.A. and proposed I.E.C. specifications, has a Rochelle salt crystal, and a diaphragm-type microphone which folds into a recess in the case. The mike feeds into a patented impedance-matching circuit followed by a high-gain amplifier, an 11-position attenuator, calibrated in 10 db. steps, and A.S.A.-standard weighting networks. The meter will accommodate 600 ohm impedance passive, and any active, filter networks.

The instrument is powered by 3 dry cells, good for a maximum of 60 operational hours, or by an external 115-230 volt, 60 cycle source. The unit measures 8¼" x 5¾" x 3¾", and is supplied in a leather carrying case.

Korfund Co., Inc., 48-83G 32 Place, Long Island City 1, N. Y. (Item 309)

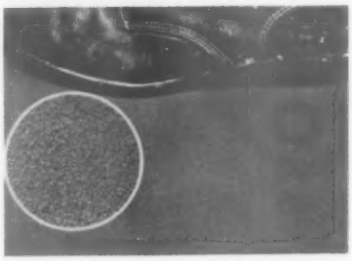
Plastic Anti-Noise Ear Plug

A plastic anti-noise ear plug has been designed for military and commercial aviation uses and for general industrial purposes.

The device, called Hear-Guard, is about ¾-inch long and comes in three sizes.

They are white in color and contain a tab to facilitate insertion. Hear-Guard reduces industrial noises and is claimed to permit the wearer to hear conversation. The device can be cleaned with soap and lukewarm water.

American Optical Co, Safety Products Div., Southbridge, Mass. (Item 310)



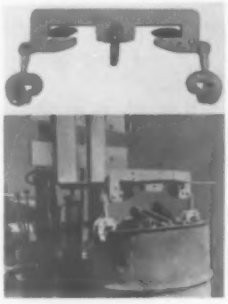
Abrasive Floor Coating

Abrasive Overlay is a heavy-bodied plastic compound with a wear resisting mineral-type aggregate. It is designed for troweling over metal, wood, concrete, or mastic, to form a slip-resistant coating. It resists water, gasoline, oil, alcohol, fats, grease, and many acids.

The product sets hard enough for foot traffic in about 12 hours, truck traffic in about 24 hours.

In red, green, and light gray; special colors on request. Available in gallons, 5-gallon, and 55-gallon drums.

Paramount Industrial Products Co., 2717 East 75th St., Cleveland 4, Ohio. (Item 311)



Drum Lift Attachment For Fork-Lift Trucks

Especially designed for use with fork lift trucks is a tip-resisting drum lifting attachment.

The device combines the features of two units currently in use.

It will lift and carry drums with its two drum clamps, plus other objects from its centered shackle.

Merrill Brothers, 56-28 Arnold Avenue, Maspeth, N. Y. (Item 312)

Foam Compatible Chemical

A potassium-based dry chemical for fighting gasoline fires is said to be compatible with mechanical foam extinguishing agents.

Called Purple "K", this chemical was tested with foam in comparison with sodium bicarbonate, and was found by the testers to have no adverse effects on the effectiveness of foam when the two are used together.

A greater fire killing capacity is also claimed for the potassium based powder compared with sodium bicarbonate base powder.

Fyr-Fyter Company, 221 Crane St., Dayton 1, Ohio. (Item 313)

Air Pollution Sampler

An air sampler is claimed to collect samples of dusts and aerosols at rates up to 200 cubic feet per minute.

The new sampler is powered by a 2 speed, one horsepower motor. It has cast aluminum housing and rotor, ball bearing motor, vibration isolating suspension mounting, and heavy duty brushes.

Filter holders accept 4-in. diameter filters. The entire filter holder assembly can be removed from the sampler.

Gelman Instrument Co., Chelsea, Michigan. (Item 314)

Electro-Magnetic Radiation Protection

An RF radiation protective suit has been designed to afford protection from the harmful biological effects of electromagnetic radiation.

Attenu-Suit is a one-piece garment claimed to have a shielding effectiveness of 50 DB over a frequency range from 30 MC to 1000 MC, and to be arc resistant to a potential up to 4000 volts.

Consisting of four layers of material, with a patented safety lock closure to maintain shielding integrity, the Attenu-Suit is claimed to remain pliant and flexible down to —40° F. Its outer layer is neoprene coated black nylon. Interlining is treated nylon mesh processed to reduce radiation by reflection. A cotton lining is provided. Weight is 10 lbs. Visor permits 130° vision.

Filtron Co., Inc., 131-15 Flushing 55, N. Y. (Item 315)

Safety Truck, Ladder Combination

A safety truck, for easier access to high bins and shelves is said to facilitate order picking and distribution operations.

Operator's weight depresses the spring loaded ladder to the floor, providing braking action on its rubber tipped feet.

Steps are treated for firm footing. A top cross bar and extended handles are provided for forward and side support. Steel angle frame and shelves are welded together. Two and three shelf models available, with or without galvanized trays.

Hammered grey finish. Ball bearing 10 and 5 in. or 8 and 4 in. demountable rubber-tired wheels.

Nutting Truck and Caster Co, 1201 West Division Street, Faribault, Minn. (Item 316)

Firefighter's Hat

A Canadian-built fireman's helmet is available in that country.

"The Chieftain" is made of fiberglass-reinforced resin, and is suspended on an inside cradle of four cross straps.

The shell is claimed to protect firefighters against the impact of blows from falling masonry, burning timbers and other hazards.

Safety Supply Co., 214 King St., E. Toronto 2, Ontario, Canada. (Item 317)

Polyurethane Filter Industrial Vacuum

The Hospital Hydro-Vac, a wet or dry pick-up vacuum cleaner, incorporates a "Staphicidal" filter to collect bacteria and germ-laden particles as small as 0.2 micron. The filter is made of rugged polyurethane, a foam-like material that has more than 500,000 pores per cubic inch; 190 cubic inches of this filtering material constitute the filter.

The filter is treated with a glycerol solution containing phenolic germicide. The filter can be washed out, sterilized with boiling water or steam, and retreated with germicide. The filter is removable for sterilizing and submersion in germicide solution.

Twelve models with 1 H.P. motor ratings, 78 in. maximum water lift and choice of 12 or 16 gallon tank capacities.

Advance Floor Machine Co., Spring Park, Minnesota. (Item 318)

Miniature Pliers of Beryllium-Copper Alloy

Miniature safety pliers suited for use in electronics, radar and other electrical applications include curved needle-nose duckbill, long-nose, and diagonal-cutting types.

Made of a beryllium-copper alloy, the miniature pliers are non-magnetic, non-corrosive and resist spark.

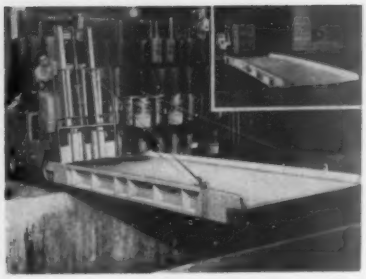
The Beryllium Corp., P. O. Box 1462, Reading, Pa. (Item 319)

Sliding Choker

A sliding choker hook now being manufactured is drop-forged and heat-treated for strength, has a wide throat to accommodate heavy thimbles and is load-rated for safety.

The sliding choker hook is available in four sizes, with a safe working load capacity ranging from 2,500 to 8,000 lbs.

Crosby Laughlin Division, Box 570, Fort Wayne, Indiana. (Item 320)



Magnesium Industrial Spans

A new line of standard industrial bridges for spanning depressed rail spurs and other divided areas in plants and warehouses is constructed of magnesium. In standard sizes from ten to twenty-four feet in length, with load capacities up to 16,000 lbs., the line includes tire-saver safety curbs, flared curb ends for wide angle turns, and beveled edges for smooth access. Cable eyes and fork lift loops are optional, and pillow block type steel hinges for permanent installation are available.

Magline Inc., 1900 Mercer Street, Pinconning, Michigan. (Item 321)

Aluminized Fireman's Overhood

A fireman's overhood for protection from heat is made of Fyrepel-3M Brand Scotch Shield aluminized glass cloth fabric which reflects radiant heat. The glass cloth is light weight, is liquid, oils and grease resistant. It is also claimed to resist most acids and chemicals. Glass cloth is also burn and char resistant.

A separate aluminized inner lining backs up the surface. Breathing apparatus can be worn beneath the hood. The curved facepiece affords a 180 degree vision and measures 4¼ by 12 in. and can be furnished aluminized for high heat protection. The facepiece, frame and drape are all detachable for replacement. Two flexible straps fit under the arms and snap on to the chestpiece.

Fyrepel Products Inc., 121 E. Main St., Newark, Ohio. (Item 322)

New Package

Onox, a fungistatic solution for use in communal shower rooms by schools, clubs and industries to stop athlete's foot, is now packaged in polyethylene jugs. These square, 1-gal. plastic containers save space and reduce weight and freight charges by 25 per cent, according to the manufacturer.

Because it is shatterproof, the container also reduces freight claims and the hazard of breakage in shower rooms.

Also introduced is fiberglas polyethylene footsprayer. The sponge rubber footmat is available for those who prefer this method of dispensing the Onox solution.

Onox, Inc., Dept. S-2, 121 Second Street, San Francisco 5, California. (Item 323)

Plastic Impregnated Cloth Gloves

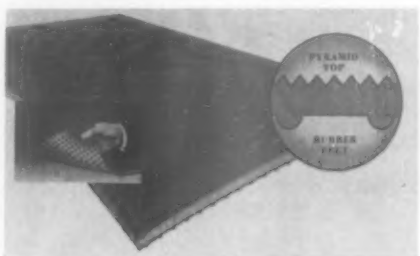
Plastic-impregnated work gloves reputed to outwear canvas gloves several times yet retain unusually high finger dexterity have been introduced.

They are made from a napped cloth impregnated on one side with polyvinyl chloride. The plasic impregnation gives Cromac gloves their wear and snag resistance qualities, and provides them with a gripping surface. The napped cloth inside the glove is said to promote wearer comfort.

Cromac gloves can be used for any work-glove application where canvas gloves are customarily worn and in many high-wear applications where expensive gloves are not justified or where more finger dexterity is needed. They are particularly useful where sharp edges or snagging are encountered, as in handling metals, plastics, glass, brick, stone, lumber and other products of factory and mine.

Although the gloves are not moisture- or oil-repellent, they show less absorption than untreated cloth gloves. They should not be dry cleaned but may be washed repeatedly.

Jomac Inc., 6128 Woodstock, Philadelphia 38 Pa. (Item 324)



Entrance Lobby Mats

Mats for building entrances and lobbies emphasize safety features and appearance, and are available in a variety of sizes and shapes. The mats feature a pyramid surface for foot traction and cleaning efficiency. Rubber feet under the surface allow drainage and air circulation.

The perforations are designed so that women's spike heels won't catch.

The R. C. Musson Rubber Co., 1320 Archwood Ave., Akron 6, Ohio. (Item 325)

New Version of Ripple Sole

A Bantam-Rib version of the RIPPLE Sole is being included in the lines of safety and work shoe manufacturers. Incorporating the features of the original, it is 25 per cent lighter. Qualities claimed are comfort, traction and long-wear.

Ripple Sole Corp., 28 W. Adams Ave, Detroit 26, Michigan. (Item 326)

Aluminum Chain Hoist

A lightweight aluminum chain hoist features a patented quiet load brake to permit faster, easier lowering.

The new load brake design is claimed to be maintenance-free. Danger of accidents caused by worn out ratchet wheels or lock pawls is reduced.

Features include a light hand chain pull and a load chain guide that surrounds the load wheel so the chain cannot bind, regardless of the pulling angle.

Operating parts are enclosed in shock-resisting aluminum alloy housing. The frame is made of the same aluminum alloy.

The ½-ton capacity hoist weighs 26½ pounds—including 10 feet of chain—and a 3-ton capacity model weighs 70½ pounds.

The hoist can be dismantled and reassembled without special tools.

Gears, shafts, and load chain are of heat treated alloy steel. The hand chain is galvanized. Main bearings are equipped with roller bearings. All other journals operate in self-lubricating sinter bearings.

Seven sizes are available, ranging from ½ to 10-ton capacities.

Reading Crane & Hoist Corp., Reading, Pa. (Item 327)

Two-Finger Polyethylene Glove

Two-finger polyethylene gloves can be disposed of after using a few times or can be re-used.

The Polly Line is filling a definite need where low-cost affords protection against acids, caustics and injurious chemicals. It is said to be lintless, watertight and moisture-proof, and nontoxic.

Also available in the conventional 5-finger style.

Singer Glove Mfg. Co., 860 W. Weed St., Chicago 22, Illinois. (Item 328)

Lens Cleaner in Polyethylene Container

The liquid lens cleaner, K-LENS-M is available in a modified square, polyethylene gallon container.

The pack weighs 2½ lbs. less than the previously used glass gallon jug. The new container requires 37% less storage space, and its label is silk-screened in white. K-LENS-M Anti-Fogging Liquid also is available in the new container.

The Wilkins Co., Inc., Groton Ave., Cortland 44, New York. (Item 329)

Parts Cleaner With Additive

Super Acitene, a new parts cleaner contains a lanolin and hexachlorophene formulation which contains soothing emollients to help protect the skin. The ingredients are claimed to leave a film on the skin which reduces irritation and chapping. Possibility of skin infection or dermatitis is also said to be lessened.

Detergents and additives have been incorporated to increase cleaning power. Recommended by the manufacturer for use in all cold-type parts washing machines and soak tanks where metal parts are cleaned by individual handling. A clear green color, is listed by U.L. and has a flash point of 105°. Available in 30 and 50 gallon drums.

Graymills Corp., 3705 N. Lincoln Ave., Chicago 13, Illinois. (Item 330)

Engineers Test Industrial Valve

Fire in a drum of oil failed to affect the sealing and operation of an industrial Flo-Ball valve in a test by engineers at a Southwest refinery.

The 2-in. valve was connected to a line from a pump and placed 2 in. from the oil surface. After an initial test for sealing, valve was opened, the oil was ignited and allowed to burn for 15 minutes.

After the fire was extinguished, and the valve cooled, gasoline under 250 psi pressure was forced into the line. The engineers reported that after this trial the valve worked and allowed no stem or seat leakage.

Hydromatics, Inc., 5 Lawrence St., Bloomfield, N. J. (Item 331)

Pressure Control for Sprinkler Systems

Latest to be added to the United Electric line of pressure controls, this unit is designed to control electric motor and alarm circuits in sprinkler systems. FM approved and UL listed, and may be used with alarm check valves, dry-pipe valves and special water control valves to actuate an electric alarm when the valves operate. Pressure settings are made by an internal adjustment nut. This control is designated J7X-5355. The adjustable range is 0 to 20 PSI with a range stop provided to prevent adjustments above 20 PSI. Proof pressure is 300 PSI and maximum pressure, 500 PSI.

United Electric Controls Co., 79A School Street, Watertown 72, Mass. (Item 332)

Half-Hour Oxygen Breather

The new half-hour Chemox, with a simplified canister designed to reduce operating costs, features an automatic relief valve and a monocular lens facepiece. An optional unit that provides operation at temperatures below zero.

Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa. (Item 333)

Welding Helmet Features Neoprene Lens Holder

A new welding helmet incorporates a moulded neoprene lens retainer which mounts on the helmet without fasteners. This, in combination with new delrin pivot assemblies and nylon chin rest bolts reduces electrical conductivity between the exterior and interior of the helmet. The helmet shell is fiber glass.

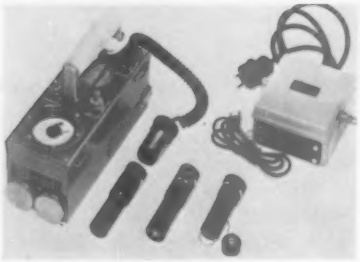
The retainer accommodates 4½ by 5¼ in. size lenses. Increased downward viewing area is provided for wearers of bi-focal glasses. A choice of conventional glass plates or Cesco Plasti-Weld (plastic) filters may be used. With plastic filter, the helmet is said to be seven ounces lighter than helmet with glass lenses and metal retainers of the same size.

The rubber retainer acts as a shock absorber, and provides less heat transfer from exterior of helmet than metal retainer.

No tools are needed for changing lenses.

The nylon headgear features a cross strap adjustable for height and position. Foam sweatbands on headband and cross straps are replaceable.

Chicago Eye Shield Co., 2705 Roscoe St., Chicago 12, Illinois. (Item 334)



Transistor Radiation Meter

A transistorized radiation survey meter can be used for measurement of alpha, beta, gamma, radiation. The instrument is portable, operating on two standard flashlight batteries. It is stabilized for both changes in voltage and temperature.

The survey counter has a 275 degree 4¼-inch long scale. It is claimed to operate in temperatures ranging from —22° to 125° F with an absolute accuracy of 15%. The electronic circuitry is stabilized to require no recalibration. The meter has a built-in loudspeaker and earphones. Geiger tubes may be interchanged for different uses.

When not in use the geiger probe is stored in a special compartment. A neon light indicates battery condition. An extra compartment can be used for spare batteries or probe. Geiger tubes have neoprene jackets which snap over the probe socket to make a tight connection.

Gelman Instrument Co., Chelsea, Michigan. (Item 335)

NEWS ITEMS

Richard L. Moody

Wilson Rubber Co.

Richard L. Moody has been named assistant sales manager of the Wilson Rubber Co., Canton, Ohio, a division of Becton, Dickinson and Co.

Moody, who has been a sales engineer for the firm since 1958, will work with the company's sales engineers and wholesale distributors.

Prior to joining Wilson, Moody had sales experience with Hood Rubber Co. and Gottwik Sales Co.

He received his B.S. in business administration from Boston College.

Charles C. Albrecht

American Optical Co.

Charles C. Albrecht, manager of engineering services for American Optical Company's safety products division, was principal speaker at the 10th Round Table of Industrial Safety held recently in Mexico City.

Albrecht is a member of the American Society of Safety Engineers and the Veterans of Safety. He spoke on "Eye Hazards and Protective Devices" and Safety Clothing and Respiratory Protection."

Parker Seal Co.

Tommy McCuistion, vice-president of the Parker Seal Co., announced the appointment of Joseph P. Bowen as representative for Minnesota and Wisconsin areas.

Bowen earned his BS degree while attending Marquette University in Milwaukee.

Edcor Safety Equipment Co.

The interest of William J. Kessler in the Edcor Safety Equipment Co. was acquired recently by Edward Gerson, who was the prinicpal organizer of the firm three years ago.

The firm handles fire and fidelity equipment in Kansas City, and is the area warehouse distributer for the General Fire Extinguisher Co.

Automatic Sprinkler Corp.

Expansion of the inspection service department of "Automatic" Sprinkler Corporation of America, Youngstown, Ohio, manufacturers and installers of standard and custom-engineered fire protection systems has been announced by J. J. Power, Jr., executive vice president.

The company's number of trained inspectors is boosted to more than 100 and will provide service to subscribers by making inspectors available in every area of the United States.

Wyandotte Chemicals Corp.

Ground was broken recently for the new Wyandotte Chemicals Corp., J. B. Ford Division plant in Scarborough Township, near Toronto, Ontario.

The plant will manufacture Wyandotte cleaning, washing and sanitizing products.

The manufacturing portion of the plant will occupy some 48,000 square feet. An office of 4,000 additional square feet is also provided. The site will accommodate additional plants for expected growth.

Alan Wood Steel Co.

Alan Wood Steel Co., Conshohocken, Pa., has named Leon J. Lieberman product manager, floor plate sales.

The inventor and principal figure in the development of AW Super Diamond rolled steel floor plate and "AW Algrip" abrasive rolled steel floor plate, Lieberman has been active in this phase of Alan Wood's business since he joined the company in October, 1932.

Lieberman joined Alan Wood to develop the floor plate business after five years' experience in all phases of design, production, and marketing of ornamental iron products.

George C. Andrews

E. D. Bullard Co.

George C. Andrews has been named to the newly-created post of director of marketing, E. D. Bullard Co.

Andrews has been with the company since 1953, starting as advertising manager, adding the duties of public relations director in 1956. He is also editor of the company's publication *What's New in Safety*.

In 1952 he was regional director for CARE and was formerly an associate of a Los Angeles public relations firm.

Andrews is currently president of the Northern California Chapter, Association of Industrial Advertisers.

Rose Manufacturing Co.

James F. Camp Jr. has been appointed sales manager for Rose Manufacturing Co.

The firm manufactures industrial safety equipment and automobile seat belts.

Camp's ten years of sales experience include former positions as regional representative for Avis Rent-a-Car system and more recently central regional manager for the Briggs Div. of the Gabriel Co.

Camp will work with forty-five distributors serving fifty states and Canada.

Josef H. Buerger

Crucible Steel Co. of America

Josef H. Buerger Jr., has been appointed assistant to the vice president—commercial at the Crucible Steel Co. of America. He will assist in administrative functions of the commercial department and have full responsibility for assigned new commercial studies.

Buerger was formerly vice president of marketing with Yuba Consolidated Industries in San Francisco.

After graduation from Princeton University in 1940, he served in the Army as a captain.

He is a member of the American Management Association and the American Ordnance Association.

Armand R. Cassavant

Charles W. Kaufman

David Clark Co.

David Clark, Worcester, Mass. manufacturers of air crew personal equipment, medical and safety equipment, has announced two promotions.

Charles W. Kaufman, formerly project sales coordinator, has been named manager of safety product sales.

Armand R. Cassavant, who has been representative for special environmental equipment, becomes manager of distributor sales.

Kaufman, beginning his ninth year with the company, began as an expediter on government orders.

Chicago Eye Shield Co.

John W. Eder Jr. has been appointed general sales manager of Chicago Eye Shield Co. Eder, a graduate of the University of Southern California School of Business Administration, served as assistant sales manager for ten years prior to this appointment.

M. Setlow & Sons, Inc.

Construction of a new factory is now complete at The Old School Manufacturing Co. work clothing plant at Prosperity, South Carolina.

All sewing operations have been transferred to the new building.

The factory was started by M. Setlow & Son, Inc. in 1958 in a former high school.

Of masonry fireproof construction, the new building stands alongside of the original quarters and it is electrically heated and air-conditioned.

TRADE PUBLICATIONS

These trade publications will keep you up-to-the-minute on new developments in safety equipment and health products. All catalogs are free, and will be sent without obligation. Just circle publication number on the Reader Service Postcard.

Vehicle Safety Checks

The safe condition of employee vehicles is checked at plant parking lots, providing an effective off-the-job safety service to employees. Involves participation on their part, enhances public relations for the company and helps assure safer vehicles in the community. Free "How to Do It" guides are available from Auto Industries Highway Safety Committee, 2000 K Street, N.W., Washington 6, D. C.

For more details circle No. 400 on enclosed return postal card.

Automatic Fire Detectors

Literature is available describing this non-electric, self-contained, system manufactured by Standard Alarm & Signal Co., P. O. Box 388, Madison, N. J. Operates automatically on heat rise, sounds warning horns. Horns can be placed inside and outside. The outside horns have a maximum range of ¾ mile under normal weather conditions, according to the manufacturer. As many detector units as required can be placed in one supervised system utilizing up to 1000 ft. of ¼-in. tubing. Can be tired into fire station by direct lines through facilities of telephone co. or street pull boxes. A manual unit for civil defense signaling, fire drill, and emergency evacuation is provided. Drops in pressure are signaled by a ringing bell, and a glass eye in the bottom of the detector indicates which detector unit has operated. Activated by DuPont Freon.

For more details circle No. 401 on enclosed return postal card.

Electric Truck

This 4-page folder illustrates and describes a 2000 lb. capacity electric truck, model F-26TA-2, manufactured by the Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio. Designed for fast tiering of unit loads under restricted warehousing conditions. Short turning radius for narrow aisle operations. Specifications, design and operating information are detailed.

For more details circle No. 402 on enclosed return postal card.

Vibration and Noise Control

Released by the Clark-Cutler-McDermott Co., Franklin, Mass., is this bulletin describing Bolt-Thru Wedgmounts. Used for dampening machine vibration where bolting to the floor is required by safety code regulations. Specifications and positioning procedures are included. Also described is the Bolt-On Wedgmount, used when bolting is not mandatory but the user desires the mount to be permanently attached to the machine.

For more details circle No. 403 on enclosed return postal card.

Scaffolding

Newark Ladder and Bracket Co., Inc., Box 10, Clark, N. J. has available a catalog covering scaffolding equipment. Included are photos, data and prices on items such as suspended cable scaffolding, pump jacks, wall scaffold brackets, roof brackets, ladder accessories, adjustable steel scaffolding and others.

For more details circle No. 404 on enclosed return postal card.

Safety Belts

A complete line of safety belts for worker protection and comfort is described in a bulletin issued by Mine Safety Appliances Co., 201 N. Braddock Avenue, Pittsburgh 8, Pa. An 8-page illustrated brochure providing details on various types of web and leather belts, including body-type, harness-type, suspension-type, and linemen's belts and straps. Information is also given on lanyards, shock absorbers, and related equipment.

For more details circle No. 405 on enclosed return postal card.

Maintenance Products

Covered in this pocket-size idex are 78 industrial maintenance products. Included are solvents, emulsion cleaners, general purpose cleaners, carbon removers, rust removers, aluminum brighteners, aluminum polishes, paint strippers, lacquer strippers, defoamers, deodorants and disinfectants. Fine Organics, Inc., 205 Main Street, Lodi, N. J.

For more details circle No. 406 on enclosed return postal card.

Combustion Indicators

Means of maintaining combustion supervision on boilers is discussed. Products described serve as smoke indicators maintain combustion efficiency. Red and green lights notify the attendant of combustion conditions and provide information to indicate adjustments. Applicable for new or existing boilers. Photomation, Inc., 96 South Washington Avenue, Bergenfield, N. J.

For more details circle No. 407 on enclosed return postal card.

Overhead Material Handling

A booklet titled "Engineering and Application Data" is available from the Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio. Information is provided for those interested in overhead materials handling. Various type of carriers, cranes, tractors, track switches, grabs, electrification are described. Studies of track design, peening and stresses are given.

For more details circle No. 408 on enclosed return postal card.

Fire Protection Survey

Increasing thicknesses of fire-protective material can often result in substantial savings in insurance rates, according to a survey of fire insurance rating bureaus and their consulting agencies by Zonolite Co., 135 South La Salle St., Chicago 3, Illinois. Some benefits usually accrue from providing more fire protection than required by building codes, according to the survey. For example, 78 per cent of the rating agencies reported that insurance rate would be reduced if the fire-resistance of the structural steel frame were increased from one hour to two hours, or from two hours to three hours. Specific cases are cited. Complete details of the survey are available.

For more details circle No. 409 on enclosed return postal card.

Multi-Purpose Solvent

Kelite Spray White E, which is water dilutable, is intended for maintenance cleaning of aircraft (exterior and interior), machine tools, light fixtures, and other hard surfaces. Claimed free of caustic chemicals and chlorinated hydrocarbons and non-flammable. Can be used as a wipe-on or spray-on, wipe-off; soak immersion; or steam cleaning method. Buffered to maintain a low pH over a wide range of dilutions. Kelite Corp., 81 Industrial Road, Berkeley Heights, N. J.

For more details circle No. 410 on enclosed return postal card.

Water Analysis

This 2-page data sheet available from Technicon Controls, Inc., Chauncey, N. Y., describes a continuous automatic method for determining boron content of water down to parts per million. Chemical methodology is detailed. A flow diagram of the analytical system is included, as well as actual chart recordings derived.

For more details circle No. 411 on enclosed return postal card.

Quartz Fiber Instrumentation

Catalog G-13A, a 10-page brochure available from Wm. B. Johnson & Associates, Inc., Mountain Lakes, N.J., describes advances in direct reading Dosemeters, Pocket Chambers, Roentgen Meters, (Condensor R-Meters), chargers, and Electrometers.

For more details circle No. 412 on enclosed return postal card.

Rolling Doors

This 36-page catalog describes types of steel and aluminum doors manufactured by the Kinnear Manufacturing Co., Fields Ave., Columbus 16, Ohio. Advantages claimed are: Neat appearance, economical installation, quick, easy operation, space saving, durability, maximum safety, fire protection. Mechanical specifications are detailed.

For more details circle No. 413 on enclosed return postal card.

Power Tools

A 16-page catalog on their line of power tools is available from the Wilton Tool Manufacturing Co., Inc., 9525 Irving Park Rd., Schiller Park, Ill. Included are descriptions and specifications of the hydraulic clamping head, air hydraulic boosters, power tool accessories, air hydraulic powered machine vises, heavy duty air cylinders, and power tool replacement parts.

For more details circle No. 414 on enclosed return postal card.

Abrasive Cutting Machines

Designed for fast, accurate, economical production of almost any material, ferrous or non-ferrous. Features of these machines are custom designing, complete guarding with the operator shielded at all times, permanently sealed ball bearings, multiple V belt drive, air power heads, and air vises. Cutting times of conventional methods are compared to those of abrasive cutting machines.

For more details circle No. 415 on enclosed return postal card.

Signaling Equipment

Sperti Faraday, Inc., Adrian, Mich., has available catalog No. 160 which contains complete information on the line of signals and accessories. Among the points covered signal uses different types of signals, selecting the right signal with the help of a signal performance chart. Described are heavy duty signals (horns and sirens), and light duty signals (bells and buzzers). Accessories are listed.

For more details circle No. 416 on enclosed return postal card.

Eye and Face Protection

A complete selection of eye and face protection for a variety of industrial applications is described in a brochure available from the Mine Safety Appliances Co. Featured is the Sightgard line of eyewear, said to provide high optical quality and impact strength in excess of specifications. A variety of frames, temple styles, bridges and lenses are available. Mine Safety Appliances Co., 201 North Braddock Ave., Pittsburgh 8, Pa.

For more details circle No. 417 on enclosed return postal card.

Color Coded Control Units

Available from The Clark Controller Co., 1146 East 152nd Street, Cleveland 10, Ohio, is an 8-page, six-color, illustrated bulletin describing their line of color-coded push button stations and control units. Included are: push button units; selector switch units; standard pilot lights; and push-to-test pilot lights or lighted push buttons. Description is given of wipe-action contacts. A color chart shows available combinations of seven colors for color coding both buttons and ferrules in the control units.

For more details circle No. 418 on enclosed return postal card.

Proper Truck Selection

Meeting the challenge of proper truck selection is the subject of a 8-page brochure published by the Automatic Transportation Co., 149 W. 87th Street, Chicago 21, Ill. Designed to give the materials handling engineer information which can be retained as reference. Listed are five ways that a mis-applied truck can damage cost positions. Case histories show how the wrong truck causes unproductive output and increased costs. Correct solutions plus photographs illustrate the importance of truck selection.

For more details circle No. 419 on enclosed return postal card.

Truck Mounted Compressors

Air receivers for truck mounted compressors are described and pictured in a catalog issued by the Kargard Co., Marinette, Wis., manufacturers of air receiver tanks, both code and non-code, in vertical, horizontal and portable sizes from 3 gallon capacity up to 120 gallon capacity.

For more details circle No. 420 on enclosed return postal card.

Building Maintenance

A bulletin on the applications of the Sika Epoxy compounds for repair, maintenance and new construction is available from Sika Chemical Corp.,, 35 Gregory Ave., Passaic, N. J. Specifically designed for bonding, patching, joint and crack sealants, surface coatings for concrete, and for the resurfacing of floors and pavements where corrosive action is a problem.

For more details circle No. 421 on enclosed return postal card.

Face and Head Protection

Available from Flood Safety Products Co., 3035-37 W. Lake Street, Chicago 12, Ill., are three bulletins describing their products for face and head protection. Bulletin No. 20 illustrates features and sizes of face shields. Bulletin No. 21 shows fiberglass and vulcanized fiber welding helmets with wide vision, stationary and lift front lens holders. Bulletin No. 22 features turned-in bib and narrow face welding helmet and cap combinations.

For more details circle No. 422 on enclosed return postal card.

Adjustable Storage Rack

This brochure illustrates rack versatility in a combination of storage heights and depths, in single, double and multiple openings, including adjustability on 3-inch centers from floor to top of rack. Self beam loads are shown by graph in load pounds and span inches. This is keyed to a table of part numbers and weights per pair of shelf beam types, with horizontal clearances. Another table supplies information concerning upright frames, with overall heights and depths.

For more details circle No. 423 on enclosed return postal card.

Protective Creams

Information on two protective creams, one for protection against materials which are not water-soluble, another which protects against irritants that are in water or water-soluble. Both are used to isolate the skin from the irritant. These products can also be provided in the form of a hand cleaner fortified with lanolin, petrolatum and mineral oils. Med-Fac Laboratories, 4232 Oakwood, Melvindale, Michigan.

For more details circle No. 424 on enclosed return postal card.

Air Sampling

Sampling for dusts in process ducts, stacks and vents is a common problem in industry. Special problems are presented when sampling in closed systems. Manual #15, available from Gelman Instrument Co., 106 North Main Street, Chelsea, Michigan, discusses these problems and presents methods to obtain accurate samples.

For more details circle No. 425 on enclosed return postal card.

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—feature equipment and services that will help you solve accident problems in your plant. Instead of making a "mental note," make sure you get full information by sending in the card. If no item number appears with an ad, it will be found on the opposite page, next to the arrow. Cover position ads are shown on the cards as: IFC — inside front cover: IBC — inside back cover; BC — back cover.

•

New Safety Equipment

—shown in the special section has been carefully reviewed. Only new products or newsworthy improvements in existing equipment are considered eligible for this section.

•

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301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325
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Keep up-to-the-minute on all the latest advances in industrial safety products and services through the advertising pages and new safety equipment features in the NATIONAL SAFETY NEWS.

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Although the Council does not test or examine the products advertised or mentioned in the editorial features, staff engineers and technicians review all product information in an effort to determine that descriptions and performance claims are accurate. It should not be construed, however, that commercial products are approved or endorsed by the National Safety Council.

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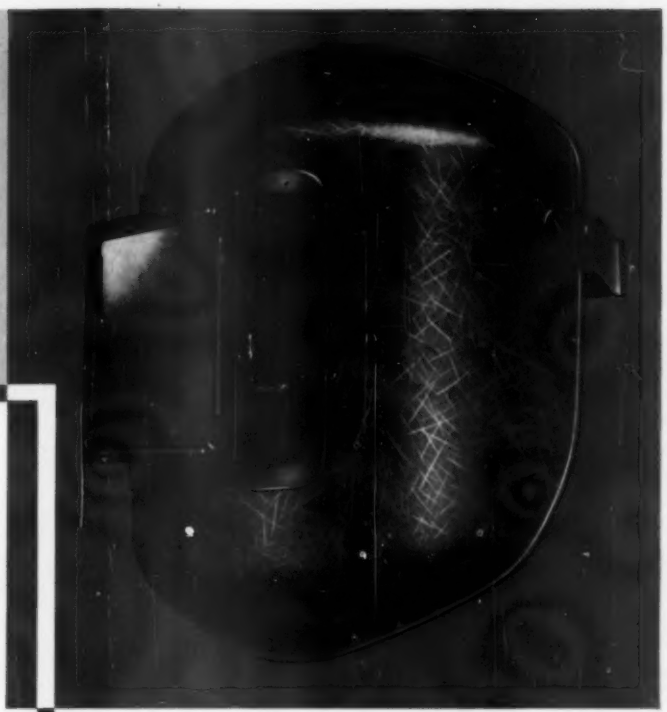
TAKE ANOTHER LOOK AT

- **the ADVERTISING pages**
- **the NEW SAFETY EQUIPMENT section**
- **the TRADE PUBLICATION section**

Make sure all the items you want to know more about are circled . . . check to make sure your name, organization, and address are printed on the reverse side of the postcard . . . THEN mail it today.

National Safety News
January, 1961

See how CESCO has advanced welding helmet design!..



Detachable Neoprene Lens Retainer gives these extra advantages:

GREATLY INCREASED VIEWING AREA • FAR LESS LENS BREAKAGE
REDUCED HEAT TRANSFER • LESS WEIGHT, MORE WEARER COMFORT

CESCO does it again!..

From CESCO research comes a remarkable new welding helmet design with features and advantages like you've never seen in a helmet before. The **No. 401-17 helmet** shown here has a one-piece neoprene lens retainer which mounts directly to the fiber glass shell by means of moulded channels. Rubber tabs—integral parts of the retainer—hold filter, outer and inner lenses securely in place. An excellent shock absorber, the retainer greatly reduces lens breakage due to dropping or bumping the helmet. Yet when lens replacement is necessary, this can be done quickly and easily without the aid of tools.

Made to accommodate Cescoweld glass lenses or CESCO Plasti-Weld plastic filters 4½" x 5¼", the 401-17 has over twice the viewing area of regular helmets. This increased visibility, especially in the downward viewing plane, is most beneficial to wearers of bi-focal glasses. Moreover, when equipped with Plasti-Weld filters, the helmet weighs nearly one-half pound less than helmets of similar size with glass lenses and metal retainers.

Nylon headgear with broad cross strap is adjustable for height and position. Foam cushion on cross strap and brow bar provides added comfort.

SEE your CESCO distributor or write our Chicago office for prices and complete information about the 401-17 welding helmet

CESCO

CESCO FOR SAFETY

CHICAGO EYE SHIELD COMPANY • 3705 West Roscoe Street, Chicago 18, Illinois

Circle Item No. IBC—Reader Service Card

NEWS FROM AO

R-5091P respirator is shown in combination with 701 goggles. R-5051P respirator is also available.

New safety for paint spray operators

Just approved by the U.S. Bureau of Mines . . . this new AO paint spray respirator protects against sprays and vapors of enamels, lacquers and lead-based paints. If you're now using any of the AO R-5000 series respirators, you don't need a new face mask, not even a conversion kit. Just replace the cartridges with either of two approved new units, and get maximum protection.

This new AO paint spray respirator is compact, light in weight, combines maximum efficiency and service life with ease of maintenance. It is one of 17 combinations possible with the R-5000 series. By simply interchanging filter units in one basic face piece you protect against a range of hazards, including mercury vapors, highly toxic insecticide and radioactive dusts.

For further information on any R-5000 respirator model, contact your nearest AO Safety Products Representative, or write for folder S-1297.

Your Surest Protection . . . AO SURE-GUARD Respirators

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Circle Item No. BC—Reader Service Card